Vol. 1040 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

March 27, 1984

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

March 27, 1984 Volume 1040 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1040 OG 32
Reissue Applications Filed	1040 OG 32
Requests for Reexaminations Filed	1040 OG 32
Recordation of Trade Name	1040 OG 32
Errata	1040 OG 32
PTO Status	1040 OG 34
Telephone and Location Directory	1040 OG 35
Patent Certificates of Correction	1040 OG 49
Disclaimers	1040 OG 49
Dedication	1040 OG 49
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1040 OG 50
Condition of Patent Applications	1040 OG 51
Reexaminations	1391
Reissue Patents Granted (31,541)	1395
Plant Patents Granted (5,210)	1397
Patents Granted	
General and Mechanical (4,438,531)	1399
Chemical (4,439,201)	1627
Electrical (4,439,630)	1745
Design Patents Granted (273,149)	1829
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 48
Classification of	
Patents (Including Reissues and Reexaminations)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 58
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1037 O.G. 12 on Dec. 13, 1983. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. International PCT fees were changed by the PCT Assembly effective Jan. 1, 1984 and were announced at 1037 O.G. 12 on Dec. 13, 1983. The search fee for the European Patent Office was changed as of Feb. 14, 1984 and was announced at 1039 O.G. 142 on Feb. 21, 1984.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Prior corresponding U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International Fees	
Basic fee (first 30 pages)	295.00
Basic Supplemental fee (for each page over 30)	6.00
Designation fee (for each national or regional office)	70.00

GERALD J. MOSSINGHOFF,
Jan. 30, 1984. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,889,054, Re. S.N. 496,273, Filed May 19, 1983, Cl. 358/83, ROW GRABBING SYSTEM, Robert H. Nagel, et al., Owner of Record: *IDR, Inc., a corp. of N.Y.,* Attorney or Agent: Lawrence G. Kurland, et al., Ex. Gp.: 233

4,217,820, Re. S.N. 567,326, Filed Dec. 30, 1983, Cl. 101/93.05, APPARATUS FOR PRINTING ON TRANSPARENCY SLIDES, Johannes Lorsch, Owner of Record: *Inventor,* Attorney or Agent: Donald A. Kettlestrings, Ex. Gp.: 337

4,304,085, Re. S.N. 556,796, Filed Dec. 1, 1983, Cl. 53/435, COCKTAIL FILLING MACHINE AND METHOD, Edward E. Ross, Owner of Record: *Del Monte Corp., San Francisco, Calif.,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 171

4,308,919, Re. S.N. 567,900, Filed Jan. 3, 1984, Cl. 172/240, HINGE-TYPE OFFSET WHEEL HARROW, Samuel J. Coughran, Jr., Owner of Record: *Rome Industries, Inc., Cedartown, Ga.,* Attorney or Agent: George M. Hopkins, Ex. Gp.: 334

4,371,879, Re. S.N. 555,295, Filed Nov. 25, 1983, Cl. 346/135.1, METALIZED RECORDING CARRIER FOR RECORDING INSTRUMENTS, AND METHOD OF ITS MANUFACTURE, Richard Hohn, et al., Owner of Record: *Robert Bosch, GmbH., Stuttgart, Germany,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 211

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No publications this issue.

Department of the Treasury
United States Customs Service
(T.D. 84–38)
19 CFR Part 133

Recordation of Trade Name: Zahnradfabrik Friedrichshafen, AG.

Agency: Customs Service, Department of the Treasury

Action: Notice of Recordation

Summary: On Oct. 27, 1983, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "ZAHNRADFABRIK FRIEDRICHSHAFEN, AG." was published in the Federal Register (48 FR 49723). The notice advised that before final action was taken on the application, consideration would be given to any relevant data, views, or arguments submitted in opposition to the recordation and received not later than Dec. 27, 1983. No responses were received in opposition to the notice.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the name "ZAHNRADFABRIK FRIEDRICHSHAFEN, AG." is recorded as the trade named used by Zahnradfabrik Friedrichshafen, AG., a corporation organized under the laws of West Germany, located at D-7990 Friedrichshafen 1, West Germany. The trade name is used in connection with the following merchandise manufactured and distributed throughout the world: gear units for machines; machine parts; brake testing stands; testing instruments and parts for land vehicles.

Date: Feb. 6, 1984

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Avenue, N.W., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Jan. 31, 1984. *Director, Entry Procedures and Penalties Division.*

Errata

"All reference to Patent No. D270816 to William A. Hays, et al., of Colo. for 'HOUSING FOR OPTICAL ELECTRONIC DISTANCE MEASURING INSTRUMENT' appearing in the Official Gazette of

Oct. 4, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,378,811 to Ronald Levitan of Transvaal, South Africa for 'SURGICAL DEVICE' appearing in the Official Gazette of Apr. 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,379,180 to John E. Baglin, et al., of N.Y. for 'METHODS FOR MAKING GRADED INDEX ANTIREFLECTIVE SURFACES' appearing in the Official Gazette of Apr. 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,385,051 to Yoshikazu Oka, et al., of Japan for 'BICYCLE COMPOUNDS, THEIR PRODUCTION AND USE' appearing in the Official Gazette of May 24, 1983 should be deleted since on patent was granted."

"All reference to Patent No. 4,391,333 to George I. Boyadjieff of Calif. for 'WELL CASING JACK MECHANISM' appearing in the Official Gazette of July 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,392,456 to Robert E. Davis of Ill. for 'PREVENTION OF FOULING IN INTERNAL COMBUSTION ENGINES AND THEIR EXHAUST SYSTEMS AND IMPROVED GASOLINE COMPOSITIONS' appearing in the Official Gazette of July 12, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,394,979 to Bertil Brandt of Sweden for 'WEAR AND ABRASION RESISTANT WALL STRUCTURE, PARTICULARLY FOR MILLS FOR GRINDING A CHARGE COMPRISING MAGNETIC MATERIAL' appearing in the Official Gazette of July 26, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,402,520 to Gerd Ziegler of Germany for 'ROLLER SKATE OR THE LIKE WITH BRAKE ATTACHMENT' appearing in the Official Gazette of Sept. 6, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,403,422 to Norman Sperling, et al., of Mass. for 'STAR FINDER' appearing in the Official Gazette of Sept. 13, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,404,976 to Lawrence L. Stewart, Jr. of Va. for 'LOW DELIVERY CIGARETTE' appearing in the Official Gazette of Sept. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,408,858 to James K. Lee of N.Y. for 'ELECTROMAGNETIC ACTUATOR HAVING A COMPLIANT ARMATURE' appearing in the Official Gazette of Oct. 11, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,409,546 to Carl Shulman of N.J. for 'MERCURY PROBE AND METHOD' appearing in the Official Gazette of Oct. 11, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,409,719 to Rudolf R. M. Muller of Germany for 'METHOD OF PIERCING AND RIVETING FASTENER TO PANEL' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,409,759 to Shinji Sekiya, et al., of Japan for 'WAFER ATTRACTING AND FIXING DEVICE' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,410,039 to Jack J. Dewald of La. for 'UNITIZED WELL TESTING APPARATUS FOR USE IN HOSTILE ENVIRONMENTS' appearing in the Official Gazette of Oct. 18, 1983, should be deleted since no patent was granted."

"All reference to Patent No. 4,410,092 to Toshihiko Satake of Japan for 'AUTOMATIC CONTROL DEVICE FOR A BOUNDARY PLATE OF A GRAIN SEPARATOR' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All refe rence to Patent No. 4,410,745 to John G. Victor of Ill. for 'ETHANOL EXTRACTION PROCESS' appearing in the Official Gazette of Oct. 18, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,411,986 to Thomas I. Abbott of N.Y. for 'RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER' appearing in the Official Gazette of Oct. 25, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,413,053 to Thomas I. Abbott of N.Y. for 'RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER' appearing in the Official Gazette of Nov. 1, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,418,212 to Marguerite S. Chang, et al., of Md. for 'SYNTHESIS OF DIMETHYLMETHYLENE DINITRAMINE' appearing in the Official Gazette of Nov. 29, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,419,022 to Robert T. Ely of Pa. for 'NONCONTRACT TEMPERATURE SENSING METHOD AND APPARATUS FOR LADLE PREHEATING' appearing in the Official Gazette of Dec. 6, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,421,013 to James L. Hansen of Neb. for 'AERATION FAN MOUNTING SYSTEM' appearing in the Official Gazette of Dec. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,421,018 to Gunter G. Pryputsch, et al., of Canada for 'FORCED CONVECTION OVEN' appearing in the Official Gazette of Dec. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,421,907 to Lawrence R. Schmidt of N.Y. for 'A METHOD FOR MAKING POLYETHERIMIDE' appearing in the Official Gazette of Dec. 20, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,423,217 to Laurent Duc, et al., of Switzerland for 'PROCESS FOR THE PRODUCTION OF HETEROCYLIC THIO COMPOUNDS' appearing in the Official Gazette of Dec. 27, 1983 should be deleted since no patent was granted."

Status of PTO Services

The following is an update of the status of PTO services for February 1984:

Service Item	FY 1984 Performance Goal (Calendar Days)	Actual	Comment
Filing Receipts:			
Patents	22	28	Problems due to conversion to the new computer system.
Trademarks	30	45	
Patent/Trademark Copies:			
Window Coupons	5	92% within 5 days	
Mail Coupons	29	99% within 29 days*	
Letter Orders	34	99% within 34 days*	
Date of oldest unfilled order		Jan. 16, 1984	
Certified Copies:			
Trademark Registrations	30	10	
Applications-As-Filed	20	97% within 15 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	13	
Filing Reg. Certificates	3	3	
Assignments:			
Patents	25	14	
Trademarks	25	13	
Avg. Days from Issue Fee Payment to Issue Date	90-100	92	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	Avg. 3 days late	Problems being resolved.
Trademark Copies Available	Issue Date	On schedule	
Trademark Official Gazette:			
In Bookstore	Issue Date	Avg. 1.5 days late	
Mailed	Issue Date	Avg. 1.5 days late	
Trademark Regs. Mailed	Issue Date	Avg. 7 days late	Due to new printing contractor start-up.

* Figures include mail processing and delivery time.

IMPROVEMENTS TO SERVICES

- *Patent and Trademark Search Rooms* — Our photocopier vendor has replaced all photocopiers with twenty-six new ones.
- *Telephone and Location Directory* — Following is an updated directory of current telephone and location information by PTO organization. This replaces the directory published in the Official Gazette of Nov. 29, 1983.

REMINDER

- *Patent and Trademark Copy Orders* — When ordering other than utility patents, it is imperative that the following alpha prefix is included with the number:

T —Trademark Registration
D—Design Patent
R —Reissue Patent
PP —Plant Patent
DT—Defensive Publication

Additionally, please remember to put your name and mailing address (or box number) on all coupons.

Mar. 6, 1984.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

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3/14/84

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3/14/84

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3/14/84

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Bindery Unit Ronald Knickerbocker FERN..... 557-1530
Copy Services Section Lendora Robertson 2nd Floor CP34..... 557-3545
Patent Information Services Section Mae Moore 2nd Floor CP34..... 557-2280
Microfilm Inventory Control System Beverly Brooks 2nd Floor CP34..... 557-2280

3/14/84

CHEMICAL EXAMINING GROUPS

110 General Metallurgical, Inorganic, Petroleum and Electrical Chemistry and Engineering rm 10C17 CP3..... 557-3606
Director Dennis E. Talbert rm 10C17 CP3..... 557-1360
Secretary Constance L. Morgan rm 10C17 CP3..... 557-1360
Clerk Phyllis Sisk rm 10C17 CP3..... 557-3606
111 Metallurgy Metal Treatment Stock Material and Lubricant Compositions L. Dewayne Rutledge rm 10C17 CP3..... 557-3578
112 Electrochemistry Winston A. Douglas rm 10C17 CP3..... 557-2517
113 Inorganic Chemistry; Refractories Plastics Luminescent & Barrier Layer Compositions Edward S. Meros rm 10C17 CP3..... 557-3597
114 Semiconductor Fabrication and Batteries Brian E. Hearn rm 10C17 CP3..... 557-3592
116 Carbon Compounds Mineral Oils and Fuels Delbert E. Gantz rm 10C17 CP3..... 557-9181

120 General Organic Chemistry rm 9C13 CP2..... 557-3920
Director Charles E. Van Horn rm 9A09 CP2..... 557-3637
Secretary Linda M. Feducia rm 9A09 CP2..... 557-3637
Clerk Kathryn Perry rm 9C13 CP2..... 557-3920
Chemical Library rm 8C22 CP2.....
121 Heterocyclic Compounds and Miscellaneous Esters Henry R. Jiles rm 9C13 CP2.. 557-3920
122 Heterocyclic Compounds and Mercaptans Donald G. Daus rm 9C13 CP2..... 557-3920
123 Bioaffecting Compounds & Compositions Donald B. Moyer rm 9C13 CP2..... 557-3920
124 Amide Amine Azo Halo Hydrocarbons Heavy Metal and Silicon Compounds Charles F. Warren rm 9C13 CP2..... 557-3920
125 Medicines Poisons Cosmetics Albert T. Meyers rm 9C13 CP2..... 557-3920
126 Herbicides and Organic Acids Esters Oxy and Oxo Compounds Natalie Trousof rm 9C13 CP2..... 557-3920

140 High Polymer Chemistry, Plastics and Molding rm 7C17 CP3..... 557-2421
Director James O. Thomas, Jr. rm 7C17 CP3..... 557-3800
Secretary Sharon C. Graham rm 7C17 CP3..... 557-3800
Clerk Ellen Scott rm 7C17 CP3..... 557-2421
142 Mixed High Polymers, Aqueous Systems, Radiation John C. Bleutge rm 7C17 CP3.. 557-3745
143 Natural Resins, Urethanes, Condensation, Type Proteins John Kight III rm 7C17 CP3..... 557-3804
144 Addition Type Carbohydrates Joseph L. Schofer rm 7C17 CP3..... 557-3807
147 General Molding and Treating Donald E. Czaja rm 7C17 CP3..... 557-2473

160 Coating, Laminating and Photography rm 6C17 CP3..... 557-3694
Director Samih N. Zaharna rm 6C17 CP3..... 557-3547
Secretary Anne A. Willey rm 6C17 CP3..... 557-3547
Clerk Vera Thomas rm 6C17 CP3..... 557-3694
161 Adhesive Bonding, Misc Chemical Manufacturing, Coating Metal or Coating Edward Kimlin rm 6C17 CP3..... 557-3697
162 Coating Processes Norman Morgenstern rm 6C17 CP3..... 557-1952
164 Miscellaneous Articles and Stock Material George F. Lesmes rm 6C17 CP3..... 557-1897
166 Photography Processes Compositions & Articles & Special Utility Compositions John Kittle rm 6C17 CP3..... 557-1960

170 Specialized Chemical Industries and Chemical Engineering rm 5C17 CP3..... 557-3677
Director Robert F. White rm 5C17 CP3..... 557-3680
Secretary Lynn M. Herbert rm 5C17 CP3..... 557-3680
Clerk Ruth W. Lyles rm 5C17 CP3..... 557-3677
171 Packaging, Manufacturing and Sheet Material Associating Robert L. Spruill rm 5C17 CP3..... 557-3677
172 Food, Technology and Analytical Chemistry Raymond N. Jones rm 5C17 CP3..... 557-3677
173 Specialized Chemical Arts S. Leon Bashore rm 5C17 CP3..... 557-3677
174 Microbiology and Genetic Engineering Thomas Wiseman rm 5C17 CP3..... 557-3677
176 Phase Separation Involving Liquids Sorption or Diffusion Charles N. Hart rm 5C17 CP3..... 557-3677
177 Residual Phase Separation, Phase Change Chemical Apparatus Misc Indust Process Frank W. Lutter rm 5C17 CP3..... 557-3677

ELECTRICAL EXAMINING GROUPS

210 Industrial Electronics Physics and Related Elements rm 9C17 CP4..... 557-2887
Director Samuel W. Engle rm 9D19 CP4..... 557-2488
Secretary Teresa E. Dugan rm 9D19 CP4..... 557-2488
Clerk Charles B. Blake rm 9C17 CP4..... 557-2887
211 Acoustics Photography Motion Pictures Photocopying Optics Music Eletrostatic Capacitors L. Thomas Hix rm 9C17 CP4..... 557-2903
212 Electrical Generator Motor Structure Power Supply and Regulations Systems Battery and Capacitor Charging Automatic Switches J. D. Miller rm 9C17 CP4... 557-5050
213 Electric Furnances Heating Welding Resistors Bruce A. Reynolds rm 9C17 CP4... 557-5070
214 Telephony Telegraphy Registers Code Converters Single Generator Systems (Vacant) rm 9C17 CP4..... 557-2887
215 Photocopying, Conductors and Inductors Insulators Printed Circuits, Panel Board Joseph V. Truhe rm 9C17 CP4..... 557-5070
216 Weighing Scales, Electrical Transmission and Interconnection Circuit Makers and Breakers Recorders and Electrical Protection Systems Elliott A. Goldberg rm 9C17 CP4..... 557-2887
217 Electric Motor Systems Prime Mover Dynamo Plants Elevators Music Electric Horology Computers and Data Processing Systems Gene Z. Rubinson rm 9C17 CP4.. 557-5080

220/290 Special Laws Administration and Designs rm 10D19 CP4..... 557-2478
Director Kenneth L. Cage rm 10D19 CP4..... 557-2877
Secretary Diana J. Langer rm 10D19 CP4..... 557-2877
Clerk Cecelia J. Krider rm 10C17 CP4..... 557-2478
Licensing and Review Edward M. Drazdowsky rm 10C24 CP4..... 557-2167
221 Mechanical Richard E. Schafer rm 10C17 CP4..... 557-2894
222 Electrical M. R. Wilbur rm10C17 CP4..... 557-2897
223 Chemical B. R. Padgett rm10C17 CP4..... 557-2037
290 Designs rm3C17 CP3..... 557-2476
Clerical and Services Section Stella Reid rm 3C17 CP3..... 557-2476
291 Industrial Arts Wallace R. Burke rm 3B18 CP3..... 557-2172
292 Household Personal and Fine Arts (Vacant) rm 3B36 CP3..... 557-2265

3/14/84

230 Information Transmission Processing Storage and Retrieval..... 557-2878
Director Earl Levy rm 11C17 CP4..... 557-5088
Secretary Laura Dorsey rm 11C17 CP4..... 557-5088
Clerk Katherine A. Nelson rm 11C17 CP4..... 557-2878
231 Television, Facsimile and Image Analysis John C. Martin rm 11C17 CP4..... 557-2801
232 General and Special Purpose Data Processing System (Measuring Testing & Monitoring) James D. Thomas rm 11C17 CP4..... 557-2881
233 Radio, Pulse Communications Multiplexing and Computer System Robert L. Griffin rm 11C17 CP4..... 557-2801
234 Miscellaneous Signaling and Speech Synthesis John W. Caldwell rm 11C17 CP4... 557-2863
235 Information Storage and Retrieval System Bernard Konick rm 11C17 CP4..... 557-2867
236 General and Special Purpose Data Processing System Including Control Error Detection and Miscellaneous Applications Jerry Smith rm 11A01 CP4..... 557-2871
237 General & Special Purpose Data Processing System including Vehicle Control & Navigation G. D. Shaw rm 11C17 CP4..... 557-2881

240 Receptacles, Cleaning, Winding and Measuring rm 7C17 CP4..... 557-2900
Director Gerald M. Forlenza rm 7D19 CP4..... 557-2906
Secretary Deborah P. Leeper rm 7D19 CP4..... 557-2906
Clerk Doretha A. Bailey rm 7C17 CP4..... 557-2900
241 Receptacles, Packages William I. Price rm 7C17 CP4..... 557-3214
242 Fluid Treating, Presses, Foods Treating, General Cleaning, Agitating, Centrifuges Harvey C. Hornsby rm 7C17 CP4..... 557-3451
243 Plumbing Fixtures, Conduits, Cleaning by Fluid Fluent Material Handling, Electrical Switches, Impellers, Rotary Fluid Motors or Pumps Stephen Marcus rm 7C17 CP4..... 557-7617
244 Measuring and Testing Gerald Goldberg rm 7C17 CP4..... 557-2913
245 Textile Machinery, Flexible Shaft Couplings, Pushing and Pulling, Winding and Reeling, Web Feeding, Bearings Stuart S. Levy rm 7C17 CP4..... 557-3451
246 Thermal and Fluid Level Measuring and Testing, Geometric Instruments, Indicators, Image Projection, Sound Recordings, Joint Packing Charles Frankfort rm 7C17 CP4..... 557-7617

250 Electronic Systems and Devices rm 8C17 CP4..... 557-2671
Director Samuel S. Matthews rm 8C17 CP4..... 557-2671
Secretary Maclovia E. Sanchez rm 8D19 CP4..... 557-2671
Clerk JoAnn Davis rm 8C17 CP4..... 557-2671
251 Electric Lamp and Discharge Devices and Circuits Fiber Optic Devices and Systems David K. Moore rm 8C17 CP4..... 557-2671
252 Electrical Measuring and Testing Amplifiers Michael J. Lynch rm 8C17 CP4..... 557-2671
253 Semiconductor Devices Andrew J. James rm 8C17 CP4..... 557-2671
254 Oscillators, Modulators, Demodulators, Antennas, Miscellanous Vacuum Tube and Semicondutor Circuits and Systems Stanley D. Miller rm 8C17 CP4..... 557-2671
255 Lasers, Optical Measuring and Testing Systems, Photocell Circuits and Systems William L. Sikes rm 8C17 CP4..... 557-2671
256 Transmission Lines, Taners, Radiant Energy Systems Alfred E. Smith rm 8C17 CP4..... 557-2671
257 Optical Systems and Elements, Vision Testing and Correction John K. Corbin rm 8C17 CP4..... 557-2671

MECHANICAL EXAMINING GROUPS

310 Handing and Transporting Media rm 3C17 CP3..... 557-3211
Director Bobby R. Gray rm 6C17 CP4..... 557-2921
Secretary Betty Rasmussen rm 6C17 CP4..... 557-2921
Clerk Margaret Stevens rm 6C17 CP4..... 557-3211
311 Dispensing Vending Coin Handling and Elevators Joseph J. Rolla rm 6C17 CP4... 557-3311
312 Assorting Vehicles and Railways Equipment Robert B. Reeves rm 6C17 CP4..... 557-3204
313 Fire Extinguishing, Fluid Spraying, Handling Implements John J. Love rm 6C17 CP4..... 557-3305
314 Brakes, Spring and Sheet Feeding Bruce H. Stoner rm 6C17 CP4..... 557-3303
315 Aeronautics, Boats, Ships, and Marine Equipment T.M. Blix rm 6C17 CP4..... 557-3222
316 Land and Motor Vehicles Joseph F. Peters Jr. rm 6C17 CP4..... 557-3205
317 Material or Article Handling, Power Driven Conveyors Robert J. Spar rm 6C17 CP4..... 557-3301

320 Material Shaping Article Manufacturing Tools rm 5D17 CP4..... 557-3320
Director Stephen G. Kunin rm 5D19 CP4..... 557-1890
Secretary Iyone L. Miles rm 5D19 CP4..... 557-3371
Clerk Vivian C. Harris rm 5D21 CP4..... 557-3371
321 Metal Deforming, Turning and Woodworking Francis S. Husar rm 5B02 CP4..... 557-3321
322 Electrical Connectors, Gear Cutting, Milling and Chucks Gil Weidenfield rm 5E02 CP4..... 557-3317
323 Abrading, Workholders and Tools Fred R. Schmidt rm 5D01 CP4..... 557-3357
324 Cutting, Cutlery Tools and Book Making Edward R. Kazenske rm 5D13 CP4..... 557-3357
325 Metal Founding, Fishing and Vermin Trapping and Welding Nicholas P. Godici rm 5E16 CP4..... 557-3357
326 Metal Working, Comminution and Wire Working Howard N. Goldberg rm 5B30 CP4... 557-3317

330 Amusement, Husbandry Personal Treatment Information rm 4C17 CP4..... 557-3125
Director Richard E. Aegerter rm 4D17 CP4..... 557-3330
Secretary Theresa R. Godfrey rm 4D19 CP4..... 557-3330
Clerk Clara S. Desmukes rm 4C17 CP4..... 557-3131
331 Plants, Plant Culture, Toys, Earth Working Robert A. Hafer rm 4A13 CP4..... 557-3131
332 Tobacco, Exercising Toiletry Richard J. Apley rm 4A07 CP4..... 557-3137
333 Dentistry, Animal Husbandry, Harvesting and Sign Exhibiting Louis G. Mancene rm 4D01 CP4..... 557-3131
334 Amusement Games Education Richard C. Pinkham rm 4B02 CP4..... 557-3137
335 Surgery Diagnostic Kyle L. Howell rm 4E02 CP4..... 557-3144
336 Surgery Instruments, Medicators and Receptors C. Fred Rosenbaum rm 4B22 CP4.. 557-3144
337 Printing, Typewriting and Excavating Edgar S. Burr rm 4E16 CP4..... 557-3501

340 Heat Power and Fluid Engineering rm 3C17 CP4..... 557-3340
Director Donley J. Stocking rm 3C17 CP4..... 557-3340
Secretary Sherry K. Bratlie rm 3C17 CP4..... 557-3340
Clerk Mary M. Reed rm 3C17 CP4..... 557-3128
341 Power Plants, Fluid Motors Robert E. Garrett rm 3C17 CP4..... 557-0900
342 Internal Combustion Engines Charles J. Myhre rm 3C17 CP4..... 557-0900
343 Combustion Power, Plant Reaction, Motors, Pumps, Rotary Expansible Chamber Devices and Plural Expansible Chamber Type Motors Carlton R. Croyle rm 3C17 CP4..... 557-3464
344 Heat Generation, Drying, Vaporizing, Ventilation, Refrigeration Albert J. Makay rm 3C17 CP4..... 557-0900
345 Stoves and Combustion Samuel Scott rm 3C17 CP4..... 557-3468
346 Heat Exchangers, Rotary Engines and Power Plant William R. Cline rm 3C17 CP4..... 557-5721
347 Fluid Handling and Valves Martin P. Schwadron rm 3C17 CP4..... 557-3401

350 General Constructions, Petroleum and Mining Engineering, Gearing, Joints and Fasteners, Textiles rm 4C17 CP3..... 557-3000
Director Al Lawrence Smith rm 4C17 CP3..... 557-3000
Secretary Carol M. Sinclair rm 4C17 CP3..... 557-3000
Clerk Joyce G. Hill rm 4C17 CP3..... 557-3002
351 Joints and Connections, Pipe Couplings, Fences, Earth & Hydraulic Engineering Cornelius J. Husar rm 4C17 CP3..... 557-1300
352 Gearing, Machine Elements, Power Transmissions Leslie A. Braun rm 4C17 CP3... 557-1300
353 Textile and Leather Manufacture, Apparel, Textiles Werner H. Schroeder rm 4C17 CP3..... 557-3411
354 Building Structures and Components Price C. Faw, Jr. rm 4C17 CP3..... 557-0570
355 Supports, Racks, Fire Escapes, Scaffolds, Flexible Partitions Ramon S. Britts rm 4C17 CP3..... 557-0540
356 Petroleum, Mining and Highway Engineering James A. Leppink rm 4C17 CP3..... 557-0540
357 Tables, Chairs, Cabinets, Windows, Doors, Buckles, Buttons, Clasps William E. Lyddane rm 4C17 CP3..... 557-0540
358 Fasteners, Locks, Closure Fasteners, Beds Gary L. Smith rm 4C17 CP3..... 557-1300

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Director (Vacant) rm 11C04 CP3..... 557-3065

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3/14/84

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Gary D. Krugman 1008 CS5..... 557-3551
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Rany L. Simms 1008 CS5..... 557-3551
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T. Jeffrey Quinn 1008 CS5..... 557-3551
Paralegal Specialist Gladys R. Springer 1008 CS5..... 557-3551
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Deputy Clerk Erma S. Brown 1008 CS5..... 557-3551

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Deputy Director Patricia M. Davis rm 3C06 CP2..... 557-3268
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Managing Attorney Law Office VI Ronald E. Wolfington rm 3C27 CP2..... 557-2937
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Secretary Nakita Dates
Trademark Services Division Doreane Poteat rm 4D23 CP2..... 557-5249
Classification Team Edward Hayes rm 4C28 CP2..... 557-5249
IKE & Assembly Team Portia Taylor rm 4D29 CP2..... 557-5253
Post-Registration Supervisor Catherine R. Hill rm 4C24 CP2..... 557-1986
Publication & Issue Supervisor Donald Perritt rm 4C23 CP2..... 557-5247
Search Room Supervisor Leon Jackson rm 2C06 CP2..... 557-3281
Affidavit Examiners rm 4C24 CP2..... 557-1988
Renewal Examiners rm 4C24 CP2..... 557-1988

3/14/84

OFFICE OF THE ASSISTANT COMMISSIONER FOR ADMINISTRATION
Assistant Commissioner Theresa A. Brelsford rm 11C34 CP3..... 557-2290
Secretary Debra Ginther rm 11C34 CP3..... 557-2290
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Secretary Tresea Robinette rm 11C34 CP3..... 557-3055
Program Analyst Joan S. Griffey rm 11C34 CP3..... 557-2290

Office of General Services
Director John D. Hassett Lobby CP1..... 557-0183
Secretary Peggy Fewell Lobby CP1..... 557-0183
Deputy G. William Richardson Lobby CP1..... 557-0183
Correspondence and Mail Division Alvin Durham rm 1A03 CP2..... 557-2932
Deputy Willie Bowman rm 1A03 CP2..... 557-1689
Outgoing Mail Branch Lawrence Ford rm 1A05 CP2..... 557-3233
Incoming Mail Branch Sallye Rayford rm 1B03 CP2..... 557-3232
Correspondence Branch Mary Allen rm 1A03 CP2..... 557-3226
Facilities Management Division William Frye Lobby CP1..... 557-7870
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Space and Telecommunications Branch Ed Bogdan rm 509 CP1..... 557-0183
Office Services Division Constant G. Fearing Lobby CP1..... 557-1219
Procurement and Travel Branch Janice Carter Lobby CP1..... 557-1218
Support Services Branch Chief Luther Campbell FERN..... 557-3560
Transportation Unit Wallace Hall FERN..... 557-1531
File Information Unit Jacqueline Waldo (Acting) Lobby CP4..... 557-2977

Office of Patent and Trademark Services
Director Frank V. Caesar rm 7D25 CP2..... 557-3236
Secretary Norma L. Watson (Acting) rm 7D25 CP2..... 557-3236
Deputy Michael Baggage rm 7D25 CP2..... 557-3236
Public Service Center C. Griffen rm 2C24 CP3..... 557-5168
Secretary Juanita G. Baker rm 2C24 CP3..... 557-5168
Patent Search Division Bernard Thomas rm 1A03 CP3..... 557-2219
Secretary Barbara Evans rm 1A03 CP3..... 557-2276
Patent Search Room rm 1A03 CP3..... 557-2277
Micrographics Branch (Commerce) Al Mundy..... 377-4968
Micrographics Branch (Crystal) Calvin Pullen..... 557-3079
Program Control Division (Vacant)..... 557-3236
PCT International Services Mary E. Turowski rm 7A04 CP2..... 557-2003
Examination Services Division Peggy Dubose rm 7E30 CP2..... 557-3256
Secretary Rebecca Faulkins rm 7E30 CP2..... 557-3717
Application Branch
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Administrative Examination Unit M. Montgomery rm 7C10 CP2..... 557-3254
Special Handling Unit Arthur Stephens rm 7C20 CP2..... 557-3831
Data Input, Quality Control, and Assembly Unit Everette Oliver rm 7E28 CP2..... 557-3716
Re-Examination Pre-processing Unit Lucille T. Batchelor rm 7C10 CP2..... 557-1562
Assignment Branch Emmanuel J. DeMesme, rm 7D13 CP2..... 557-3266
Deputy Annie Harrell rm 7D13 CP2..... 557-3266
Secretary Voilet A. McCoy rm 7D13 CP2..... 557-3266
Examination Unit Virginia Clark rm 7D13 CP2..... 557-3247
Digest and Recording Unit Fred L. Bennett rm 7D13 CP2..... 557-3259
Title Unit Patricia A. Alexander rm 2C32 CP4..... 557-3826
Certification Branch Aberdeen Cutler 1627 DOC..... 377-2270
Certification Section Lannie Anderson 1627 DOC..... 377-4849
Input Records and Control Mary Grose 1627 DOC..... 377-3359
Microfiche and Printing Catherine Jones 1627 DOC..... 377-4401
Court and Documentation Gladys Dorsey rm7D19 CP2..... 557-1560

Office of Personnel
Personnel Officer Aaron W. Deitch rm 920 CM2..... 557-2662
Assistant to the Personnel Officer Hugh N. Major rm 926 CM2..... 557-2662
Secretary Mildred Jeter rm 926 CM2..... 557-2662
Classification and Employment Division Thomas H. Neuhauser rm 925 CM2.. 557-1244
Employee Relations Division William H. Crout rm 921 CM2..... 557-3643
Employee Development Division Mary Anna Culkin rm 320 CM2..... 557-3431
Operations Division Beverly Boykin rm 900 CM2..... 557-1208

Office of Publications
Director Stanley J. Bania rm 6C07 CP2..... 557-3794
Secretary Gloria J. Coffey rm 6C07 CP2,..... 557-3794
Deputy Director Richard A. Bawcombe rm 6C07 CP2..... 557-9737
Publishing Division Ruth C. Mason rm 6C17 CP2..... 557-3283
Deputy Manager Sylvia F. Martin 6C17 CP2..... 557-6388
Allowed Files and Assembly Branch Yvette E. Simms rm 6C30 CP2..... 557-6395
Production Control Branch Willard D. Ireland rm 6C14 CP2..... 557-6412
Editorial Branch Marthina Thompson rm 6C06 CP2..... 557-6393
Data Base Query Section Gail Wooten rm 6C06 CP2..... 557-6392
Patent Copy Inspection Section Annie Kelly rm 6C06 CP2..... 557-6390
Drafting Branch Burton P. Shields rm 6C30 CP2..... 557-6404
Statistical Analysis Division Michael Stellabotte rm 6C07 CP2 557-1963
Data Base Inspection Branch Melvinia Gary rm 6C10 CP2..... 557-6416
Certificates of Corrections Branch Delores Cherry rm 7C18 CP2..... 557-0709
Technical Development Division Edwin P. Hall (Acting) rm 6C07 CP2..... 557-1992

Office of Equal Employement Programs
Director R. Jacqueline Dees rm 9D35 CP3..... 557-3030
Secretary Denise Walker rm 9D32 CP3..... 557-3036
Affirmative Actions Division Chief Henry J. Ford rm 9D33 CP3..... 557-3029
Complaints Division Chief Rhoda K. Kluge rm 9D31 CP3..... 557-3029
EEO Specialist (Complaints) Charles E. Deskins rm 9E11 CP3..... 557-3029
EEO Clerk (Complaints) Robin Mitchell rm 9D32 CP3..... 557-3037

Office of Management and Organization
Director Sara E. Bjorge rm 927 CM2..... 557-5825
Secretary (Vacant) rm 927 CM2..... 557-5825
Team Leaders
Alvin Dorsey rm 927 CM2..... 557-5825
Jean E. Buckhout rm 927 CM2..... 557-5825

3/14/84

OFFICE OF THE ASSISTANT COMMISSIONER FOR FINANCE AND PLANNING
Assistant Commissioner Bradford R. Huther rm 11D27 CP3..... 557-1572
Secretary Vickie T. Bryant rm 11D27 CP3..... 557-1572

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Director James R. Lynch rm 2C32 CP3..... 557-3875
Chief, Execution and Control Division Harold E. Buswell 2C32 CP3..... 557-3875
Chief, Programs and Budget Division Aris G. Harrison rm 2C32 CP3..... 557-3875

Office of Finance
Director Leonard L. Nahme rm 2C32 CP3..... 557-3051
Secretary Virginia R. Clark rm 2C32 CP3..... 557-3051
Deputy Director L. Jack Ell rm 2C32 CP3..... 557-3051
Accounting and Cost Analysis Division Thomas L. Gass rm 2C33 CP3..... 557-2983
Fee Accounting Division Frank S. Lane Sr. rm 1B01 CP2..... 557-3230
Deposit Account Branch Delores H. Riley (Acting) rm 1B01 CP2..... 557-3227

Administrator for Automation
Administrator J. Howard Bryant rm 1108 CP6..... 557-6000
Secretary Terry D'Amico rm 1108 CP6..... 557-6024
Director Automation Program Control Group
A. J. Barsanti rm 1108 CP6..... 557-6009
Secretary Donna Powers rm 1108 CP6..... 557-6010
Director, Plan, Administration and Support
Douglas F. Cunha rm 1108 CP6..... 557-6015
Director, Automation Plan Control
Sanford Zarkin rm 1108 CP6..... 557-6016

Office of Technology, Assessment and Forecast
Director John Terapane rm 1225 CP6..... 557-4114
Secretary Judy Dickie rm 1225 CP6..... 557-4114

Office of Automation Concepts Implementation
Director Don W. LeCrone rm 1142 CP6..... 557-6156
Secretary Audrey Jackson rm 1142 CP6..... 557-6157

Office of Image and Information System
Director L Liddle rm 1142 CP6..... 557-6154
Secretary Debbi Blackwell rm 1142 CP6..... 557-6154

Office of Search Systems
Director Donald P. Stein rm 1108 CP6..... 557-6024

3/14/84

Office of Personnel
Personnel Officer Aaron W. Deitch rm 920 CM2..... 557-2662
Assistant to the Personnel Officer Hugh N. Major rm 926 CM2..... 557-2662
Secretary Mildred Jeter rm 926 CM2..... 557-2662
Classification and Employment Division Thomas H. Neuhauser rm 925 CM2.. 557-1244
Employee Relations Division William H. Crout rm 921 CM2..... 557-3643
Employee Development Division Mary Anna Culkin rm 320 CM2..... 557-3431
Operations Division Beverly Boykin rm 900 CM2..... 557-1208

Office of Publications
Director Stanley J. Bania rm 6C07 CP2..... 557-3794
Secretary Gloria J. Coffey rm 6C07 CP2,..... 557-3794
Deputy Director Richard A. Bawcombe rm 6C07 CP2..... 557-9737
Publishing Division Ruth C. Mason rm 6C17 CP2..... 557-3283
Deputy Manager Sylvia F. Martin 6C17 CP2..... 557-6388
Allowed Files and Assembly Branch Yvette E. Simms rm 6C30 CP2..... 557-6395
Production Control Branch Willard D. Ireland rm 6C14 CP2..... 557-6412
Editorial Branch Marthina Thompson rm 6C06 CP2..... 557-6393
Data Base Query Section Gail Wooten rm 6C06 CP2..... 557-6392
Patent Copy Inspection Section Annie Kelly rm 6C06 CP2..... 557-6390
Drafting Branch Burton P. Shields rm 6C30 CP2..... 557-6404
Statistical Analysis Division Michael Stellabotte rm 6C07 CP2 557-1963
Data Base Inspection Branch Melvinia Gary rm 6C10 CP2..... 557-6416
Certificates of Corrections Branch Delores Cherry rm 7C18 CP2..... 557-0709
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Secretary Denise Walker rm 9D32 CP3..... 557-3036
Affirmative Actions Division Chief Henry J. Ford rm 9D33 CP3..... 557-3029
Complaints Division Chief Rhoda K. Kluge rm 9D31 CP3..... 557-3029
EEO Specialist (Complaints) Charles E. Deskins rm 9E11 CP3..... 557-3029
EEO Clerk (Complaints) Robin Mitchell rm 9D32 CP3..... 557-3037

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Team Leaders
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Jean E. Buckhout rm 927 CM2..... 557-5825

3/14/84

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Secretary Donna Powers rm 1108 CP6..... 557-6010
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Douglas F. Cunha rm 1108 CP6..... 557-6015
Director, Automation Plan Control
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Office of Image and Information System
Director L Liddle rm 1142 CP6..... 557-6154
Secretary Debbi Blackwell rm 1142 CP6..... 557-6154

Office of Search Systems
Director Donald P. Stein rm 1108 CP6..... 557-6024

3/14/84

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Program Assistant Sylvia A. Huffman rm 5D05 CP2..... 557-3646
Deputy Director John F. Fancovic rm 5D05 CP2..... 557-3646
ADP Systems Technology Division John J. Cochran rm 5D05 CP2..... 557-3646
ADP Trademarks & Administration Division Raymond R. Rahn rm 5D05 CP2... 557-6330
ADP Operations Division Donald Tynes rm 100 North CM1..... 557-1071
Production Control Branch Betty J. Wilson rm 100 North CM1..... 557-1071
Computer Operations Branch Louise Hill rm 100 North CM1..... 557-1071
ADP Patent Division Raymond R. Rahn (Acting) rm 5D05 CP2..... 557-6332

CM1	Crystal Mall 1, 1911 Jefferson Davis Highway
CM2	Crystal Mall 2, 1921 Jefferson Davis Highway
CP1	Crystal Plaza 1, 2001 Jefferson Davis Highway
CP2	Crystal Plaza 2, 2011 Jefferson Davis Highway
CP3	Crystal Plaza 3, 2021 Jefferson Davis Highway
CP4	Crystal Plaza 4, 2121 Jefferson Davis Highway
CP6	Crystal Plaza 6, 2221 Jefferson Davis Highway
CP34	Crystal Plaza 34, 2021 Jefferson Davis Highway
CS4	Crystal Square 4, 1745 Jefferson Davis Highway
CS5	Crystal Square 5, 1755 Jefferson Davis Highway
CG2	Crystal Gateway 2, 1225 Jefferson Davis Highway
EADS	1232 South Eads Street
FERN	1411 South Fern Street
WNY	Washington Navy Yard, 2 & M. Street, S.E., Bldg. 159

3/14/84

PATENT NOTICES

Certificates of Correction for the Week of Mar. 27, 1984

Re. 31,376	4,382,969	4,402,020	4,416,565
D. 270,975	4,383,064	4,402,313	4,416,958
3,655,201	4,383,095	4,402,868	4,417,289
3,947,363	4,383,119	4,402,986	4,417,474
4,030,657	4,384,990	4,403,307	4,417,478
4,056,586	4,385,223	4,403,995	4,417,714
4,074,352	4,385,912	4,404,399	4,418,151
4,202,681	4,386,096	4,404,897	4,418,201
4,239,993	4,386,454	4,405,531	4,418,704
4,269,867	4,386,609	4,406,687	4,419,185
4,294,849	4,387,092	4,406,789	4,419,417
4,296,930	4,388,738	4,408,821	4,419,558
4,309,421	4,389,046	4,409,139	4,420,097
4,328,682	4,389,714	4,409,300	4,420,274
4,333,734	4,390,020	4,409,431	4,420,342
4,338,873	4,392,595	4,410,500	4,420,616
4,349,794	4,393,785	4,410,639	4,421,984
4,352,134	4,394,461	4,410,845	4,422,550
4,353,448	4,394,841	4,411,935	4,423,584
4,354,665	4,395,456	4,411,979	4,423,719
4,369,493	4,395,915	4,412,928	4,424,155
4,372,224	4,397,001	4,413,105	4,424,412
4,375,519	4,397,022	4,413,130	4,424,492
4,379,876	4,399,284	4,415,364	4,424,894
4,380,620	4,400,317	4,416,295	4,426,409
4,380,966	4,400,374	4,416,482	

Disclaimers

4,071,572.—*Wayne S. Amato,* Syracuse; *Bhaskar Bandyopadhyay,* Camillus; *Robert Herbert Fitch,* Syracuse; and *Bruce Edward Kurtz,* Marcellus, all of N.Y. CYCLIC ETHYLENE OXYHYDROCHLORINATION PROCESS WITH REDUCED HYDROCARBON EMISSIONS. Patent dated Jan. 31, 1978. Disclaimer filed Dec. 8, 1983, by the assignee, *The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency.*

Hereby enters this disclaimer to claim 1 of said patent.

4,279,326.—*Sam W. Meineke* and *Harold Nedell,* Bellaire, Tex. EXHAUST MUFFLER. Patent dated July 21, 1981. Disclaimer filed Jan. 24, 1984, by the assignee, *Meineke Discount Muffler Shops, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,318,026.—*Ralph J. D'Amato,* Lancaster, Pa. METHOD OF MAKING A GRID FOR A CATHODE-RAY TUBE ELECTRON GUN. Patent dated Mar. 2, 1982. Disclaimer filed Jan. 30, 1984, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,351,533.—*John A. Moore,* Peoria, Ill. FACE SEAL WITH ROTATABLE SEAL RING. Patent dated Sept. 28, 1982. Disclaimer filed Feb. 10, 1984, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to all claims of said patent.

4,385,721.—*Robert C. Olsen,* Cupertino and *James R. Jensen,* Fremont, Calif. TRAY CORNER STRUCTURE. Patent dated May 31, 1983. Disclaimer filed Jan. 23, 1984, by the assignee, *Container Corp. of America.*

Hereby enters this disclaimer to the sole claim of said patent.

Dedication

4,162,278.—*Albrecht H. Granzow,* Franklin Township, Somerset County, N.J. FLAME RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING A PENTAERYTHRITYL PHOSPHONATE. Patent dated July 24, 1979. Dedication filed Dec. 14, 1983, by the assignee, *American Cyanamid Co.*

Hereby dedicates to the Public the entire remaining term of said patent.

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The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

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	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390, Ext. 391
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
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	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1321
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 18, 1984

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action

CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director 10-28-82
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.

GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director 7-16-73
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.

HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director 1-05-83
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.

COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director 7-26-82
Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.

SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—
R. F. WHITE, Director 1-16-76
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director 1-03-82
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.

SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director 6-01-81
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.

INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director 7-06-81
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.

RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—
G. M. FORLENZA, Director 3-17-82
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.

ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director 9-30-80
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.

DESIGN, GROUP 290—KENNETH L. CAGE, Director 1-14-71
Industrial Arts; Household, Personal and Fine Arts.

MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director 6-04-81
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.

MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director 6-21-82
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.

AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—
R. E. AEGERTER, Director 11-04-76
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.

HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director 11-20-81
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.

GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—
A. L. SMITH, Director 7-23-81
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.

Expiration of patents: The patents within the range of numbers indicated below expire during February 1984, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,302,213 to 3,307,199, inclusive
Plant Patents ..... Numbers 2,707 to 2,722 inclusive

REEXAMINATIONS

MARCH 27, 1984

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,381,046 (180th)
JET AND ROCKET FUEL
Charles A. Cohen, Westfield, and Clifford W. Muessig, Roselle, both of N.J., assignors to Esso Research and Engineering Company
Reexamination Request No. 90/000,115, Nov. 27, 1981.
Reexamination Certificate for Patent No. 3,381,046, issued Apr. 30, 1968, Ser. No. 577,563, Aug. 15, 1966.
Int. Cl.³ C07C *5/03, 5/22*
U.S. Cl. 585—253

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **14** is confirmed.

Claims **1–13, 15** and **16**, having been finally determined to be unpatentable, are cancelled.

14. A process for the production of an improved fuel which may be used in jet and rocket engines which comprises:

(a) hydrogenating an endo dimer of an alicyclic conjugated diene selected from the group consisting of cyclopentadiene, methylcyclopentadiene, and mixtures thereof to at least the dihydrogenated derivatives;

(b) thermally treating said dihydrogenated dimer thereby converting at least a portion of endo isomer to its exo isomer;

(c) and hydrogenating the said exo dihydro isomer to the exo tetrahydro isomer.

B1 3,976,622 (181st)
PROCESS FOR THE PRODUCTION OF POLYISOCYANATES WITH A BIURET STRUCTURE
Kuno Wagner; Johannes Eimer; Joachim Zirner, all of Leverkusen; Rainer Raab, Odenthal, and Dietrich Liebsch, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 441,778, Feb. 12, 1974, Pat. No. 3,903,127.
Reexamination Request No. 90/000,334, Mar. 1, 1983.
Reexamination Certificate for Patent No. 3,976,622, issued Aug. 24, 1976, Ser. No. 578,557, May 19, 1975.
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1973, 2308015
Int. Cl.³ C08G *18/79*
U.S. Cl. 528—67

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2** and **3**, having been finally determined to be unpatentable, are cancelled.

Claim **1** is determined to be patentable as amended:

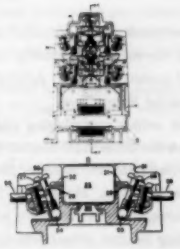
Claims **4** and **5**, dependent on amended claims, are determined to be patentable.

1. In the production of a polyurethane resin wherein a polyisocyanate is reacted with an active hydrogen containing material, the improvement wherein said polyisocyanate has a biuret structure and a maximum viscosity of 50,000 cP at 20° C. and is produced by a process comprising

A. reacting (1) excess quantities of [an organic] *hexamethylene* diisocyanate [having aliphatically bound isocyanate groups] with (2) a biuretizing agent selected from the group consisting of water and organic compounds which convert organic isocyanates into the corresponding biurets at elevated temperatures, the substituents of said organic compounds being inert in the biuretization process and not forming a constituent of the biuret, at a temperature of from 60° to 250° C., and

B. removing excess [unreacted] *hexamethylene* diisocyanate, said process characterized in that the [organic] *hexamethylene* diisocyanate and biuretizing agent are used in proportions corresponding to a molar ratio of diisocyanate to monofunctional biuretizing agent of at least 11:1.

B1 4,184,134 (182nd)
ELECTRICAL SWITCHING APPARATUS HAVING CONVERTIBLE CONTACT STRUCTURE
Hugh Kane, Chagrin Falls, and Bruce A. Oellerich, Mentor, both of Ohio, assignors to GTE Products Corp., Waltham, Mass.
Reexamination Request No. 90/000,323, Feb. 4, 1983.
Reexamination Certificate for Patent No. 4,184,134, issued Jan. 15, 1980, Ser. No. 933,320, Aug. 14, 1978.
Int. Cl.³ H01H *1/58*
U.S. Cl. 335—198



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **2**, having been finally determined to be unpatentable, are cancelled.

Claims **3** and **4** are determined to be patentable as amended:

Claims **5–10**, dependent on amended claims, are determined to be patentable.

New claims **11–19** are added and determined to be patentable.

3. An electrical switching apparatus [in accordance with claim **2**] *having a convertible contact module for selectively providing normally open or normally closed contact operation comprising*

supporting structure;

a contact actuator mounted in said supporting structure and reciprocally movable with respect thereto;

a convertible contact module having first and second contact terminals on the exterior thereof, said convertible contact module being removably mounted in said supporting structure in engagement with said contact actuator in either of two

positions respectively providing normally open and normally closed contact conditions between said contact terminals;

first and second conductive members mounted on said supporting structure, each having a contact region for making contact with a contact terminal of the convertible contact module when the convertible contact module is mounted in the supporting structure in either of said two positions;

holding means for releasably holding the convertible contact module in the supporting structure in either of said two positions with the contact terminals of the convertible contact module making electrical contact with the contact regions of the conductive members; and

first and second connecting means on said first and second conductive members, respectively, for permitting external connections to said conductive members, each connecting means being spaced from the associated contact region and from the holding means whereby when said convertible contact module is released by said holding means, removed from the supporting structure, and changed from one position to the other, the connecting means and external connections made thereto do not interfere with release and movement of the convertible contact module and are not disturbed;

wherein

said contact actuator is reciprocally movable between two spaced positions;

said convertible contact module includes

a housing,

said contact terminals being mounted on said housing at opposite sides thereof and extending outwardly from said housing, said contact terminals passing through the housing to the interior thereof, and

contact elements within said housing engaging said contact actuator when the convertible contact module is mounted in the supporting structure in either first or second respectively inverted positions, the convertible contact module being in a normally open condition with the contact elements providing an open circuit between the contact terminals when mounted in one position and being in a normally closed condition with the contact elements providing a closed circuit between the contact terminals when mounted in the other position; and

said contact actuator moves the contact elements to produce a closed circuit between the contact terminals of a convertible contact module in the normally open condition upon movement from one spaced position to the other spaced position, and moves the contact elements to produce an open circuit between the contact terminals of a convertible contact module in the normally closed condition upon movement from the one spaced position to the other spaced position;

and wherein

the portion of each contact terminal of the convertible contact module exterior of the housing has generally flat planar opposite surfaces, and the corresponding surfaces of the two contact terminals lie generally in the same plane; and

the contact regions of the two conductive members lie generally in the same plane whereby when the convertible contact module is mounted in the supporting structure in either of the two inverted positions, a surface of each contact terminal is in electrical contact with a contact region of a conductive member.

B1 4,210,376 (183rd)

ELECTRICAL CONNECTOR RECEPTACLE

Donald W. K. Hughes, Mechanicsburg, and Ronald W. Myers, Landisburg, both of Pa., assignors to Amp Incorporated, Harrisburg, Pa.

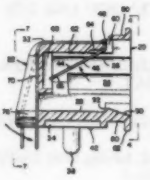
Continuation-in-part of Ser. No. 967,441, Dec. 12, 1978.

Reexamination Request No. 90/000,100, Nov. 4, 1981.

Reexamination Certificate for Patent No. 4,210,376, issued Jul. 1, 1980, Ser. No. 14,442, Feb. 23, 1979.

Int. Cl.³ H01R *23/72, 23/10, 23/56*

U.S. Cl. 339—17 LC



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **4**, **6**, **8**, and **9** are determined to be patentable as amended:

Claims **2**, **3**, **5**, **7**, and **10**, dependent on amended claims, are determined to be patentable.

1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising a contact spring *portion* extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said opening and towards the opposite internal sidewall, and each conductor having a lead portion extending from said plug-receiving end *transversely* through said housing **[**between**]** *from* said one internal sidewall **[**and**]** *to the exterior of* the adjacent external sidewall and *along said adjacent external sidewall* towards said rearward end, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact spring portions of said conductors, said connector receptacle being characterized in that:

said plug-receiving end has a circumferentially continuous frame portion which surrounds *said* plug-receiving opening,

conductor-receiving aperture means **[**extending**]** *extends* through said adjacent *external* sidewall to said one internal sidewall, said conductor-receiving aperture means being spaced from said plug-receiving end and adjacent to said frame portion, said conductor-receiving aperture means communicating with said plug-receiving opening,

said conductors **[**extending**]** *extend* through said conductor-receiving aperture means, said contact springs extending into said plug-receiving opening from said conductor-receiving aperture means, *and*

a plurality of side-by-side channels in said adjacent external sidewall **[**extending**]** *extend* from said conductor-receiving aperture means to said rearward end, said lead portions of said conductors *also* extending across said adjacent external sidewall and being in said channels, said conductors extending from said adjacent external sidewall

across said rearward end and having end portions which extend beyond the other one of said external sidewalls, every other one of said conductors extending substantially normally from said adjacent external sidewall across said rearward end, the remaining conductors extending obliquely away from said adjacent external sidewall and across said rearward end whereby said end portions of said conductors are offset from each other.

B1 4,321,956 (184th)
BELT ATTACHMENT FOR TIRE CHAINS

René J. Martinelli, Clackamas, Oreg., assignor to Burns Bros., Portland, Oreg.

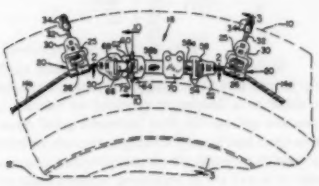
Continuation-in-part of Ser. No. 3,273, Jan. 15, 1979, Pat. No. 4,280,545.

Reexamination Request No. 90/000,373, May 2, 1983.

Reexamination Certificate for Patent No. 4,321,956, issued Mar. 30, 1982, Ser. No. 122,195, Feb. 19, 1980.

Int. Cl.[3] **B60C** *27/00*

U.S. Cl. 152—222



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **2** is confirmed.

Claim **1** is determined to be patentable as amended:

1. In a tire chain,

a tire chain lateral member adapted to extend adjacent a lateral side of a vehicle tire,

a first lug secured to a first end of said lateral member,

a second lug secured to a second end of said lateral member, said second lug having a slot,

a belt having a first end secured to said first lug,

and a buckle for location along said lateral side of said vehicle tire, said buckle having an aperture therethrough and a hook on one end thereof turned back at an acute angle [to] *outwardly away from* a laterally outwardly facing side of said buckle, wherein said hook is adapted for reception through the slot in said second lug when said tire chain is secured to said tire,

a loop of said belt between first and second ends thereof extending through the aperture of said buckle from the inwardly facing side of said buckle adjacent the lateral side of said tire, said buckle including a slidable member passing through said loop for holding said loop in releasably secured relation to said buckle when the second end of said belt is drawn up,

wherein the second end of said belt extends from said buckle toward said first end when said tire chain is secured to said tire while being movable laterally outwardly for rotating said buckle and rapidly releasing said hook from said second lug to release said tire chain from said tire.

B1 4,337,117 (185th)
DECAY RESISTANT MATERIAL

Warren J. Bodendorf, Montgomery, and Alphonse R. Presto, Holyoke, both of Mass., assignors to Texon Inc., South Hadley, Mass.

Reexamination Request No. 90/000,294, Nov. 22, 1982.

Reexamination Certificate for Patent No. 4,337,117, issued Jun. 29, 1982, Ser. No. 177,779, Aug. 13, 1980.

Int. Cl.[3] **D21H** *5/22*

U.S. Cl. 162—161

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–3**, having been finally determined to be unpatentable, are cancelled.

Claim **4** is determined to be patentable as amended:

Claim **5**, dependent on an amended claim, is determined to be patentable.

New claims **6–17** are added and determined to be patentable.

6. A process for manufacturing a wet laid, synthetic fibrous sheet material resistant to decay by microbial organisms, according to papermaking techniques and comprising the steps of:

a. forming a furnish by the steps in the sequence listed and which consist essentially of:

1. providing a dispersion of fibers consisting essentially of cellulosic fibers,

2. adding a cationic polymer in an amount sufficient to retain greater than 99% of the amount of metal quinolinolate added in step 3. below in said sheet material during formation,

3. adding an anionic metal-quinolinolate emulsion providing from 0.375 to 0.9 parts by weight metal quinolinolate based on 100 parts by weight fiber, and

4. adding a polymer colloid in an amount sufficient to prevent coagulation of the binder added in step C by said metal quinolinolate,

b. forming the furnish into a web,

c. saturating the web with a binder, and

d. drying the web to form a fibrous sheet with fibers and quinolinolate uniformly distributed throughout the binder and where the amount of metal quinolinolate retained in the sheet material is greater than 99% of the amount of metal quinolinolate included in the furnish.

9. A process for manufacturing a wet laid, synthetic fibrous sheet material resistant to decay by microbial organisms, according to papermaking techniques and comprising the steps of:

a. forming a furnish by the steps in the sequence listed and which consist essentially of:

1. providing a dispersion of fibers consisting essentially of cellulosic fibers,

2. adding a cationic polymer in an amount sufficient to retain greater than 99% of the amount of metal quinolinolate added in step 3. below in said sheet material during formation,

3. adding an anionic metal-quinolinolate emulsion providing from 0.375 to 0.9 parts by weight metal quinolinolate based on 100 parts by weight fiber, and

4. adding a polymer colloid in an amount between 5 to 12 parts by weight based on 100 parts by weight fiber,

b. forming the furnish into a web,

c. saturating the web with a binder, and

d. drying the web to form a fibrous sheet with fibers and quinolinolate uniformly distributed throughout the binder and where the amount of metal quinolinolate retained in the sheet material is greater than 99% of the amount of metal quinolinolate included in the furnish.

15. A process for manufacturing a wet laid, synthetic fibrous

sheet material resistant to decay by microbial organisms according to papermaking techniques and comprising the steps of:

a. forming furnish by the steps in the sequence listed and which consist essentially of:

1. providing a dispersion of fibers consisting essentially of cellulosic fibers,

2. adding a cationic polyelectrolyte polymer in an amount from 0.4 to 2.0 parts by weight based on 100 parts by weight fiber, the amount of cationic polyelectrolyte polymer being sufficient to retain greater than 99% of the amount of copper-8-quinolinolate in step 3. below in said sheet material during formation,

3. adding an anionic copper-8-quinolinolate emulsion providing from 0.375 to 0.9 parts by weight copper-8-quinolinolate based on 100 parts by weight fiber,

4. adding a polymer colloid in an amount from 5 to 12 parts by weight based on 100 parts by weight fiber,

b. forming the furnish into a web,

c. saturating the web with a binder, and

d. drying the web to form a fibrous sheet with fibers and copper-8-quinolinolate uniformly distributed throughout the binder and where the amount of copper-8-quinolinolate retained in the sheet material is greater than 99% of the copper-8-quinolinolate included in the furnish.

B1 4,344,132 (186th)

SERIAL STORAGE INTERFACE APPARATUS FOR COUPLING A SERIAL STORAGE MECHANISM TO A DATA PROCESSOR INPUT/OUTPUT BUS

Jerry D. Dixon, Boca Raton; Robert H. Farrell, Coral Springs, and Francis R. Koperda, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Reexamination Request No. 90/000,332, Feb. 18, 1983.
Reexamination Certificate for Patent No. 4,344,132, issued Aug. 10, 1982, Ser. No. 103,782, Dec. 14, 1979.
Filed Feb. 18, 1983, Ser. No. 103,782
Int. Cl.³ G06F *3/00, 5/06*
U.S. Cl. 364—200

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 5,** and **10** are determined to be patentable as amended:

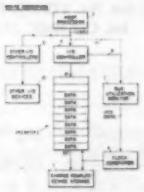
Claims **2–4, 6–9,** and **11–16,** dependent on amended claims, are determined to be patentable.

5. Serial storage interface apparatus for coupling a serial storage mechanism to an input/output (I/O) bus of a data processor and comprising:

address circuitry receiving address information from the input/output bus for performing an address comparison operation for locating the proper starting address storage location in the serial storage mechanism;

a first-in-first-out (FIFO) buffer storage mechanism;

first data transfer circuitry for coupling the FIFO buffer storage mechanism to the data processor I/O bus;



second data transfer circuitry for coupling the FIFO buffer storage mechanism to the serial storage mechanism;

bus utilization monitoring circuitry responsive to the data transfer activity of the first data transfer circuitry for generating signals representing values of I/O bus availability;

and speed control circuitry responsive to the signals representing values of I/O bus availability for causing the serial storage mechanism to operate at different speeds for different values of I/O bus availability [to the serial storage interface apparatus] *during data transfer operations and responsive to a compare signal from the address circuitry for causing the serial storage mechanism to operate at a high speed and maintain the high speed for the entire comparison operation for locating the proper starting address in the serial storage.*

REISSUES

MARCH 27, 1984

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

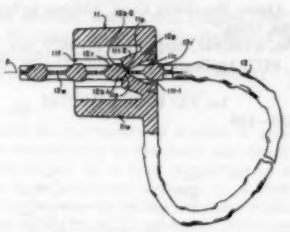
Re. 31,541
WEBBED HARNESSING DEVICE

William E. Wood, Hudson, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Original No. 4,137,606, dated Feb. 6, 1979, Ser. No. 801,448, May 27, 1977. Application for reissue Mar. 24, 1980, Ser. No. 132,732

Int. Cl.³ B65D *63/00*

U.S. Cl. 24—16 PB **11 Claims**



9. A harnessing device comprising

a locking head having a channel therethrough,

a webbed strap attached to said head and having rungs joined to one another by centrally depressed, stretchable webbing,

said strap being stretched with the spacing between rungs controlled by the extent of stretching of said strap and the stretching causing a reduction in the thinness of said webbing by a prescribed amount according to the extent to which the strap is stretched, said rungs having a profile controlled by stretching a plurality of segments, including perpendicular segments that are caused to depart from their initial perpendicularity by an amount that is controlled by the extent to which the strap is stretched,

said locking head further including a locking pawl in said head for securing said strap therein.

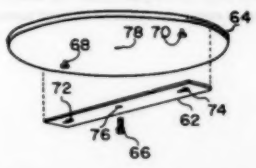
Re. 31,542
SAFETY ATTACHMENT FOR LAWN MOWERS

Glenn C. Hetrick, 2045 E. Parkway Dr., Altoona, Pa. 16602

Original No. 4,171,608, dated Oct. 23, 1979, Ser. No. 853,045, Nov. 21, 1977. Continuation-in-part of Ser. No. 729,113, Oct. 4, 1976, abandoned. Application for reissue Oct. 10, 1980, Ser. No. 196,086

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—295 **45 Claims**



30. A cutting structure adapted to be mounted for rotary movement with a drive shaft, comprising:

a substantially rigid disc portion carried by the drive shaft; and

a cutter bar portion carried by the disc portion on one face thereof, the cutter bar portion extending in a material cutting mode across the disc portion without the ends of said cutter bar portion extending beyond the peripheral edge of the disc portion.

Re. 31,543
CURABLE COMPOSITIONS

Howard M. Bank, Freeland, and Keith W. Michael, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Original No. 3,971,747, dated Jul. 27, 1976, Ser. No. 567,148, Apr. 11, 1975. Application for reissue Sep. 27, 1982, Ser. No. 423,752

Int. Cl.³ C08K *3/40;* **C08G** *77/06*

U.S. Cl. 523—435 **33 Claims**

1. A method of preparing compositions containing silicon-oxygen-carbon bonds comprising reacting under substantially anhydrous conditions

A. an organosilicon compound containing at least one ≡SiOH group with

B. a compound containing at least one epoxy group, *no hydroxyl groups and selected from the group consisting of aliphatic, cycloaliphatic and hetrocyclic epoxy reactants, silylated epoxides and polyglycidyl ethers of novalac condensation products,* said reaction being carried out in the presence of a catalytic amount of

C. an aluminum compound selected from the group consisting of

a. $Al(OR)_3$ in which R is either a hydrogen atom or *is* selected from the group consisting of alkyl radicals contaning from 1 to 20 inclusive carbon atoms or aryl and aryl-containing hydrocarbon radicals containing from 6 to 24 inclusive carbon atoms;

I(b)

$$Al(OR)_n(O\overset{\overset{O}{\|}}{C}R')_{3-n}$$

in which R is as previously defined, R′ is selected from the group consisting of the hydrogen atom, alkyl radicals containing from 1 to 30 inclusive carbon atoms and aryl or aryl-containing radicals of at least 6 carbon atoms, n having a value of from 0 to 2 and condensates of such compounds;

c. aluminum salts of the formula

$$H^+Al^-(OR)_4$$

in which R is as previously defined;

d. aluminosiloxy compounds of the formula

$$\equiv AlOSiR_3^2$$

in which R^2 is selected from the group consisting of —OR radicals in which R is as defined,

$$-O\overset{\overset{O}{\|}}{C}R'$$

radicals in which R′ is as defined, monovalent hydrocarbon or halohydrocarbon radicals containing from 1 to 30 inclusive carbon atoms, and siloxane moieties of the formula

$$-OSiO_{3-n}$$
$$\quad\;|$$
$$\quad R_n^3$$

in which R^3 is selected from the group consisting of OR radicals in which R is as defined,

$$-OCR'$$
$$\parallel$$
$$O$$

radicals in which R′ is as defined and monovalent hydrocarbon or halohydrocarbon radicals containing from 1 to 30 inclusive carbon atoms, and a has a value of from 1 to 3; the remaining aluminum valences being satisfied by —OAl═, —OR

$$-OCR'$$
$$\parallel$$
$$O$$

or —$OSiR_3^2$ bonding, R, R′ and R^2 being as previously defined; and

e. aluminum chelates formed by reacting compounds (a), (b) or (c) with sequestering agents in which the coordinating atoms are oxygen.

Re. 31,544

CURRENT UNIT FOR ARC WELDING

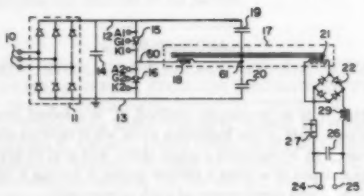
John B. G. Hedberg, Hanover, N.H., assignor to Thermal Dynamics Corporation, West Lebanon, N.H.

Original No. 4,159,409, dated Jun. 26, 1979, Ser. No. 891,821, Mar. 30, 1978. Division of Ser. No. 795,501, May 10, 1977, abandoned. Application for reissue Sep. 19, 1980, Ser. No. 188,785

Claims priority, application United Kingdom, May 12, 1976, 19532/76

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—130.21 **10 Claims**



2. An arc welding current supply unit arranged to be fed with alternating current voltage and to provide direct current for welding electrodes, said unit including a controlled frequency converter operating with a half period which is less than the average duration of the current and voltage transients caused by short circuits through droplets of the weld material and adapted to be connected to the welding electrodes through a transformer, a control device for controlling said converter in a manner such that the arc power remains substantially unchanged irrespective of changes in load caused by the welding operation, wherein current pulses are formed in the secondary winding of the transformer by alternatingly charging and discharging at least one capacitor which is connected in series with said primary winding of said transformer and which is discharged therethrough, a direct current voltage intermediate source, and switching means responsive to said control device for connecting said at least one capacitor to said intermediate source for charging and discharging said capacitor; and wherein said control device further comprises means for controlling said switching means to altenatingly charge and discharge said at least one capacitor at a frequency which is substantially inversely proportional to the square of said voltage applied to said current supply unit.

Re. 31,545

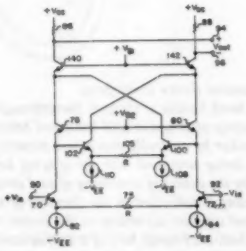
FEED-FORWARD AMPLIFIER

Patrick A. Quinn, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Original No. 4,146,844, dated Mar. 27, 1979, Ser. No. 846,743, Oct. 31, 1977. Application for reissue Jan. 22, 1981, Ser. No. 227,286

Int. Cl.³ H03F *1/26, 3/45*

U.S. Cl. 330—149 **8 Claims**



6. A feed forward amplifier comprising:

an emitter-coupled pair of input transistors having a predetermined resistance in the emitter path thereof;

a first pair of transistors connected in common-base configuration, the emitters of which are connected to respective collectors of said input transistors;

an emitter-coupled pair of correction transistors having a predetermined resistance in the emitter path thereof so as to match the gain of said correction transistors with said input transistors, the bases of said correction transistors being connected to respective collectors of said input transistors and the collectors thereof being cross-coupled to the respective collectors of said first pair of common-base transistors to provide collector-current summing nodes; and

a second pair of transistors connected in common base configuration to provide an output signal, the emitters of which are connected to respective collector current summing nodes.

PLANT PATENTS

GRANTED MARCH 27, 1984

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,210

ALMOND × PEACH HYBRID ROOTSTOCK TREE (HANSEN 2168)

Carl J. Hansen, deceased, late of Citrus Heights, Calif. (by Betty C. Hansen, successor), assignor to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 16, 1982, Ser. No. 408,612
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond × peach hybrid rootstock tree substantially as illustrated and described, particularly characterized by a high percentage of successful reproductions from hardwood cuttings, by a deep rooting, adventitious root system providing excellent anchorage, by immunity to root-knot nematode infections, *Meloidygyne incognita acrita* and *M. javanica*, and by a tree generally resembling the Hansen 536 but slightly more vigorous, roots from cuttings more consistently, and with tree branches which have more green and less red color of the developing leaves and shoots.

5,211

NECTARINE TREE, "SUMMER RED"

Donald J. Jost, 9633 S. Rio Vista Ave., Reedley, Calif. 93654

Filed Dec. 3, 1982, Ser. No. 446,851
Int. Cl.³ A01H *5/03*
U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree which bears generally yellow-fleshed, clingstone fruit of large and uniform size and characterized as to novelty by bearing fruit which ripens a minimum of four days before the Flamekist variety of nectarine tree, an unpatented variety developed by the U.S. Department of Agriculture, and by a skin which has at full maturity a waxy and bright finish and extensive red coloration, typically spreading over from 60 to 90 percent of its surface area, with the suture coloration blending into the general skin coloration.

5,212

RAPHIOLEPIS INDICA CV. MONRUCE

William B. Usrey, Glendora, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.

Filed Aug. 26, 1982, Ser. No. 411,825
Int. Cl.³ A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct selection of Raphiolepis as substantially shown and described herein, that is characterized by a dense growth habit; a compact inflorescence; flowers double and with large spreading light pink petals.

PATENTS

GRANTED MAR. 27, 1984

ERRATA

For CLASS	See PATENT NO.
070–057	4,438,550
297–304	4,438,978
414–042	4,439,097
414–043	4,439,098
414–045	4,439,099
414–115	4,439,100
414–126	4,439,101
414–633	4,439,102
406–099	4,439,200
502–167	4,439,348
502–180	4,439,349
502–527	4,439,350

PATENTS

GRANTED MARCH 27, 1984

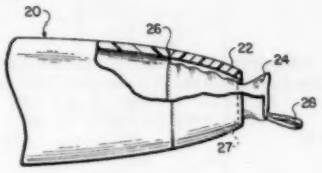
GENERAL AND MECHANICAL

4,438,531

LOW FRICTION MEANS TO FACILITATE PUTTING ON AN UNDERWATER DIVING SUIT

Richard W. Long, and Robert T. Stinton, both of San Diego, Calif., assignors to Diving Unlimited International, Inc., San Diego, Calif.

Filed Apr. 28, 1982, Ser. No. 372,479
Int. Cl.³ A62B *17/00*; B63C *11/04*
U.S. Cl. 2—2.1 R **6 Claims**



1. In an underwater diving suit having an opening therein to permit a diver to insert a portion of the diver's body therethrough when putting on the suit, said opening having tight fitting exposed rubber sealing means adjacent thereto for sealing the interior of the diving suit against leakage, the improvement comprising:

a tubular skirt of flexible low friction material affixed at one of its ends to the interior of said diving suit adjacent said exposed rubber sealing means, said skirt being of sufficient length to substantially cover said exposed rubber sealing means when said unit is being put on;

whereby the diver's body portion slides along said skirt shielded from said exposed rubber sealing means with frictional drag substantially reduced when the diver puts on the diving suit;

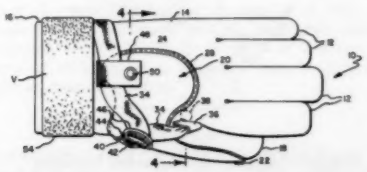
said skirt being manually retractable into the diving suit after the diving suit is put on to permit said exposed rubber sealing means to directly engage the diver's body portion and thereby seal the interior of the diving suit against leakage.

4,438,532

PROTECTIVE GLOVE

Alexander F. Campanella, 22 15th St., Buffalo, N.Y. 14213, and J. David Bannon, 246 Bryant St., Buffalo, N.Y. 14222

Filed May 23, 1983, Ser. No. 497,055
Int. Cl.³ A41D *13/10*
U.S. Cl. 2—16 **10 Claims**



1. A protective glove, comprising:

at least one finger stall portion enclosing the fingers;

an intermediate portion enclosing the hand;

a cuff portion enclosing the wrist;

a thumb stall portion enclosing the thumb;

a rigid thumb protecting member secured to the glove and spanning the metacarpal phalangeal joint of the thumb; and

means secured to the protecting member and located in the first web space between the thumb and index finger applying a substantially outward force to the thumb's metacarpal phalangeal joint.

4,438,533

INTERLINING FOR GARMENTS AND METHOD FOR THE MANUFACTURE THEREOF

Josef Hefele, Gräfelfing, Fed. Rep. of Germany, assignor to Kufner Textilwerke KG, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 267,658
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3021039
Int. Cl.³ A41D *1/00*
U.S. Cl. 2—97 **50 Claims**

1. In a garment having an interlining for stiffening parts of the garment, an improved interlining which imparts bulk and a smooth hand feel to the garment, said interlining comprising:

(a) an interlining backing material,

(b) textile flock fibres having a fibre length of 0.5 to 2.0 mm,

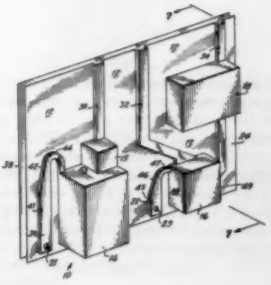
(c) a flock binder comprising a screen like applied print applied to the interlining backing material for anchoring the flock fibres, the flock binder consisting of a polymer material at least part of which is cross-linked.

4,438,534

PASSIVE DISPENSER

George B. Keyes, and Randall G. Richards, both of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Mar. 3, 1982, Ser. No. 354,485
Int. Cl.³ E03G *9/02*
U.S. Cl. 4—227 **7 Claims**



1. A passive dispenser for containing a quantity of a first solution and a quantity of a second solution and for co-dispensing a predetermined volume of said solutions into a body of liquid in which said dispenser is placed, in response to the level of said body of liquid being lowered from a first elevation to a second elevation, the dispenser comprising:

a first product chamber, said product chamber containing a water-soluble cake forming, upon dissolution, the first solution;

a vent conduit extending upwardly from the top of the first chamber;

a first refill/discharge pathway providing fluid communication between said body of liquid and said first product chamber, said pathway being a siphon conduit;

a second product chamber, said second product chamber being separate and apart from said first product chamber;

a third product chamber above the second chamber, which chambers are separate and apart one from the other;

a water-soluble cake being contained in at least one of said second and third product chambers forming, upon dissolution, the second solution;

a conduit to provide fluid communication between the second chamber and the third chamber, said conduit entering the second chamber proximate the bottom thereof;

vent conduits extending upwardly from the respective tops of said second and third product chambers; and

a second refill/discharge pathway providing fluid communication between said body of liquid and said second product chamber, said second refill/discharge pathway being a siphon conduit, whereby in response to the level of said body of liquid being lowered from a first elevation to a second elevation, solution contained within the second and the third chambers is dispensed into the body of liquid, and solution contained within the first chamber is dispensed into said body of liquid.

4,438,535

SEAT AND COVER ASSEMBLY FOR A TOILET BOWL

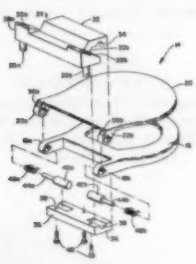
Candelario Paredes, 6608 Briarhaven Dr., Dallas, Tex. 75240

Continuation of Ser. No. 190,374, Sep. 24, 1980, Pat. No. 4,342,124. This application May 13, 1982, Ser. No. 377,805

The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.

Int. Cl.³ A47K *13/00*

U.S. Cl. 4—234 **9 Claims**



1. A seat and cover assembly for a toilet bowl, said assembly comprising a seat member, a cover member for said seat member, means for mounting said seat member and said cover member relative to said bowl for pivotal movement between an upright position and a lowered position, spring means operatively engaging said seat member and said cover member for biasing said seat member towards said cover member and said cover member towards said seat member in all positions of said members, and means for quick-releasably securing said cover member in said upright position.

4,438,536

HIGH PRESSURE TOILET WATER FEEDER CONVERSATION TANK

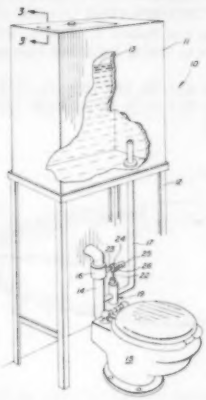
Alfredo Rivera, 1266 Olmstead Ave., Apt. 2-F, Bronx, N.Y. 10462

Filed Dec. 11, 1981, Ser. No. 330,029

Int. Cl.³ E03D *1/02*

U.S. Cl. 4—343 **1 Claim**

1. A high pressure toilet water feeder conservation tank assembly, comprising in combination, a tank for storing used water, a drain pipe from said tank being connected at its lower end to a fresh water supply pipe of a toilet, a high pressure valve connected along said fresh water supply pipe, a handle pivotally extending from said high pressure valve for flushing operation thereof, a control valve along said drain pipe comprising a cylinder connected across said drain pipe and a piston slidable in said cylinder for regulating the flow of used water



through said cylinder, a connecting arm between said piston and handle, and means for adjustably coupling said connecting arm along said handle, whereby the proportion of tank water used per flush is increased by coupling the connecting arm closer to the free end of the handle and decreased by coupling the connecting arm closer to the pivoted end of the handle.

4,438,537

LIQUID DIRECTIONAL FLOW APPARATUS

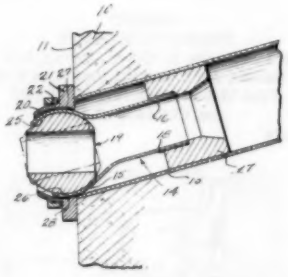
Damon R. Bickle, 6 Rustic St., Kenmore, Queensland, Australia (4069)

Continuation-in-part of Ser. No. 352,566, Feb. 26, 1982, abandoned. This application Apr. 20, 1982, Ser. No. 370,067

Claims priority, application Australia, Mar. 2, 1981, PE7792

Int. Cl.³ E04H *3/16, 3/18*

U.S. Cl. 4—492 **4 Claims**



1. A liquid directional flow apparatus including:

an elongate mounting tube having an inner portion engageable in an outlet pipe of a swimming pool and an outer portion which is enlarged relative to the inner portion and wherein the outer portion has a side wall that curves outwardly and then inwardly relative to the longitudinal axis of the elongate mounting tube; an eyeball shaped nozzle having a channel extending therethrough which is mounted in the outer portion of the mounting tube and wherein the outer surface of the nozzle has a curvature at

least substantially complementary to the inner surface of the outer portion whereby said nozzle may be pivoted relative to said mounting tube; and

an inner clamping ring having a curved inner surface engageable with a curved outer surface of said outer portion of the mounting tube and pivotable thereto during installation; and

locking means engageable with said inner clamping ring to orient the inner clamping ring in a direction substantially parallel to the plane of an outer wall of the swimming pool when the liquid directional flow apparatus is installed in said outlet pipe to enable the eyeball nozzle to be oriented in a direction substantially normal to the plane of said outer wall.

4,438,538

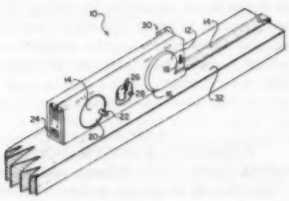
COMBINATION TOOL FOR CARPENTRY

Peter Larsen, 2186 Montgomery, Cardif by the Sea, Calif. 92007

Filed Aug. 26, 1981, Ser. No. 296,338

Int. Cl.³ B25F *1/00*; G01B *19/00*

U.S. Cl. 7—164 **14 Claims**



1. A carpentry tool comprising:

a housing of generally elongated rectangular configuration having at least two orthogonally-related, straight-edged sides and at least one substantially planar face;

fixed abutment means extending from said planar surface adjacent one end thereof, said abutment means defining a plane facing the other end of said housing and being transversely perpendicular to said planar surface and defining a T-square with pivot points at either end thereof coincident with the intersection of the ends of said abutment with the edges of said planar surface;

planar fixed indicia along at least one side of said housing cooperatively arranged with one of said pivot points on the opposite side of said housing to indicate and establish an angle with respect to an external elongated member when said pivot point is an engagement with the sides of the external member; and

orthogonally related bubble level elements fixed to said housing;

whereby when one of said pivot points is engaged with the edge of a structural member mounted at an angle with respect to the horizontal and the applicable bubble is centered, the existing angle or pitch of said structural member with respect to horizontal may be determined directly from said indicia.

4,438,539

ACTUATOR FOR GENERATING TOOL HEAD

Raymond A. Stephens, Sterling Heights, Mich., assignor to The Valeron Corporation, Troy, Mich.

Filed Nov. 13, 1981, Ser. No. 321,251

Int. Cl.³ B23G *1/26*

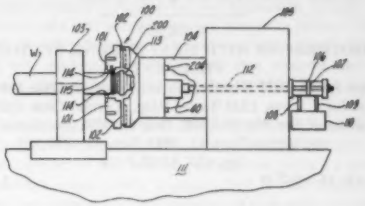
U.S. Cl. 10—120.5 R **18 Claims**

1. Apparatus for moving an output member in response to movement of an input member comprising:

first and second members;

means coupling at least one of the first and second members to the input member for providing relative linear movement between the first and second members in response to movement by the input member;

means for imparting rotary movement to the second member in response to the relative linear movement, the means for imparting rotary movement comprising at least one helical



key protruding from one of the first and second members and at least one helical slot in the other of the first and second members matingly engaging at least a portion of the at least one helical key; and

means for imparting linear movement to the output member in response to a rotary movement by the second member.

4,438,540

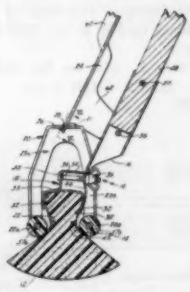
WRINGABLE MOP ASSEMBLY

Walter H. Senour, Ada, Mich., assignor to Amway Corporation, Ada, Mich.

Filed Nov. 20, 1981, Ser. No. 323,392

Int. Cl.³ A47L *13/46*

U.S. Cl. 15—119 A **3 Claims**



1. A sponge mop comprising:

a sponge;

a channel pinchingly securing said sponge and including a first aperture;

mounting means adapted to receive a mop handle and defining a pair of second apertures;

a clamp including a pair of ears extending through said pair of second apertures to hingedly connect said clamp to said mounting means;

drawing means for drawing said clamp toward said mounting means to secure said channel between said clamp and said mounting means, whereby said clamp pivots about said ears as said drawing means draws said clamp toward said mounting means;

a detent tab extending from one of said clamp and said mounting means into said first aperture in said channel to prevent said channel from shifting laterally with respect to said mounting means and said clamp;

a bridge movable relative said sponge and carrying a pair of parallel wringer members disposed on opposite sides of said sponge, said bridge defining a third aperture; and

a wringer handle pivotally mounted to said mounting means and including a tab extending through said third aperture in said bridge, whereby as said wringer handle is pivoted with respect to said mounting means, said wringer handle pivots with respect to said bridge about said tab forcing said bridge to move relative said sponge to cause said wringer members to wring said sponge.

4,438,541

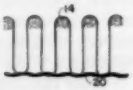
TOOTHBRUSH WITH HEAT SHRUNK SYNTHETIC FILAMENTS

Joseph Jacob, 1035 Washington St., Wooster, Ohio 44691, and Charles J. Love, 1221 Tower Bldg., Lorain, Ohio 44053

Division of Ser. No. 946,608, Oct. 2, 1978, abandoned. This application May 13, 1982, Ser. No. 377,793

Int. Cl.³ A46B 9/04

U.S. Cl. 15—167 R **3 Claims**



1. A toothbrush having a base and a plurality of bristles, each of which is composed of a heat shrunk synthetic filament held in a single composite inverted U-shaped configuration by two lengths of straight, substantially parallel, closely spaced side legs and a return bend, the side legs and return bend of each bristle being contracted to a reduced size from being heat shrunk while held over a form rail so as to form tightly adjacent filaments with a tight return bend, whereby each bristle acts as a dry scoop to cut into and scarf away dental plaque.

4,438,542

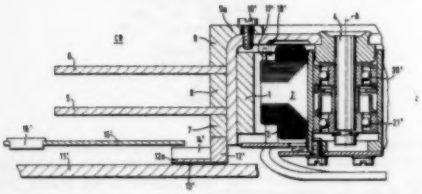
DISK STORAGE DRIVE

Bernhard Schuh, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,584

Int. Cl.² G11B 5/012

U.S. Cl. 360—97.000 **10 Claims**



1. In a digital information-storage apparatus of the type having a read and/or write head which inscribes information bits onto, and/or reads them from, at least one data storage disk which is rotated at high speed relative to such head by means of a rotary disk-holding structure configured to be accommodated in the large central aperture of such disk and transmit rotation thereto,

the combination with said rotary disk-holding structure of a brushless d.c. reluctance-torque motor, said brushless d.c. reluctance-torque motor comprising

a stator,

a rotor,

said rotor being coupled to said rotary disk-holding structure to transmit rotation thereto,

said rotor being a permanent-magnet rotor,

said stator having a stator winding which when energized by d.c. current establishes a stator field which in cooperation with said rotor produces an electromagnetic-torque component having a magnitude which is a variable function of rotor angular position and which, at predetermined angular positions of said rotor, is of zero magnitude, and thus incapable of starting the rotor from said predetermined positions,

whereby if, when the motor is shut off, the rotor were to come to a complete stop in said predetermined positions, it could not thereafter be restarted by mere application of current to the stator winding,

said rotor and stator being separated from each other by an air gap and together forming a magnetic circuit whose reluctance is a function of the angular position of said rotor thereby producing a reluctance-torque component, the reluctance-torque component varying as a function of rotor angular position and having a magnitude which is of non-zero value at said predetermined rotor angular positions at which the electromagnetic-torque component is of zero value,

said non-zero value of said reluctance-torque component at said predetermined angular positions precluding the rotor from becoming stuck at said predetermined positions during start-up of the motor,

an angular position detector detecting the angular position of said rotor, and

means controlling flow of current through said stator winding in dependence upon the operation of said angular position detector to cause said stator field to alternate, in dependence upon rotor angular position, between two stator-field orientations which are 180 electrical degrees opposite to each other.

4,438,543

WINDSHIELD WIPER DEVICE

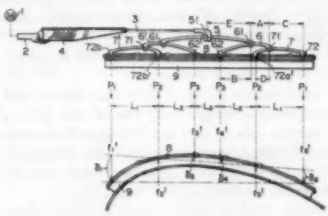
Hiroki Noguchi, Oobu; Akira Fukami, and Naomi Miyazaki, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 27, 1981, Ser. No. 287,122

Claims priority, application Japan, Sep. 18, 1980, 55-129558; Nov. 6, 1980, 55-156302

Int. Cl.³ B60S 1/04

U.S. Cl. 15—250.42 **1 Claim**



1. A windshield wiper device comprising:

a blade rubber formed of a resilient material;

a backing holding said blade rubber in place;

an arm;

drive means for driving said arm;

a primary lever pivotally attached at its central portion to an end of said arm;

a pair of secondary levers pivotally attached to opposite ends of said primary lever, each of said secondary levers having a third support claw at one end for supporting said backing;

a pair of yokes, one pivotally attached to the other end of each of said secondary levers, respectively, each of said yokes having at opposite ends first and second support claws for supporting said backing, each said first support claw being disposed outwardly from the center of said blade rubber with respect to said second support claw; and

a spring for loading said arm to force said blade rubber against the surface of a windshield of a vehicle,

wherein said primary lever, said pair of secondary levers and said pair of yokes are arranged such that the load applied to said blade rubber is selected to satisfy the following relations (1) and (2):

$$L_1 > L_2 > L_3 \quad (1) \text{ and}$$

$$W_1 < W_2 < W_3 > W_4 > W_5 \quad (2)$$

where

$$W_1 = \frac{\frac{1}{2}(P_2 - f_2) + P_1 - f_1}{L_1},$$

$$W_2 = \frac{\frac{1}{2}(P_3 - f_3) + \frac{1}{2}(P_2 - f_2)}{L_2},$$

$$W_3 = \frac{P_3 - \frac{1}{2}(f_3 + f_4)}{L_3},$$

$$W_4 = \frac{\frac{1}{2}(P_3 - f_4) + \frac{1}{2}(P_2 - f_5)}{L_2},$$

$$W_5 = \frac{\frac{1}{2}(P_2 - f_5) + P_1 - f_6}{L_1},$$

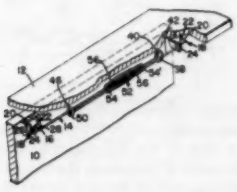
L_1: spacing interval between said first and second support claws of each of said yokes;
L_2: spacing interval between each of said second support claws and a closest one of said third support claws,
L_3: spacing interval between said third support claws,
P_1: load applied to said first support claws,
P_2: load applied to said second support claws,
P_3: load applied to the third support claws, and
f_1–f_6: reactions applied by said backing.

4,438,544

LOOPED ROD SAFETY STOP

Russell W. Waldo, Mendota Heights, Minn., and Cardel E. Miller, Hudson, Wis., assignors to Ideal Security Hardware Corporation, Saint Paul, Minn.

Filed Jan. 8, 1982, Ser. No. 338,169
Int. Cl.³ E05F 5/08
U.S. Cl. 16—85 **4 Claims**



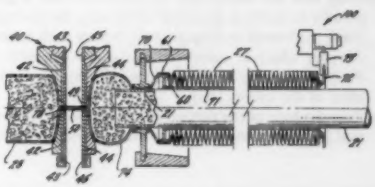
1. Apparatus for checking the unrestricted opening of a door hingedly mounted in a frame, comprising:
(a) a first elongated element having one end thereof mounted at the door and carrying, spaced from said mounted end, a member having an aperture formed therethrough;
(b) a second elongated element having one end thereof mounted at the frame and carrying, spaced from said mounted end, a member having an aperture formed therethrough;
(c) wherein said aperture in said member carried by said first element is significantly larger than dimensions of said second element in a plane normal to an axis of elongation of said second element, and said aperture in said member carried by said second element is significantly larger than dimensions of said first element in a plane normal to an axis of elongation of said first element;
(d) wherein said first element is received in said aperture in said member carried by said second element and said second element is received in said aperture in said member carried by said first element for relative axial movement of said first element and said second element;
(e) wherein said first element and said second element comprise generally linearly extending wire forms, and wherein said member of said first element and said member of said second element comprise looped extensions of said first element and said second element integrally formed therewith at ends of said first element and said second element opposite said ends by which said first element and said second element are mounted to the door and frame respectively; and and
(f) a wire spring enclosing said first element and said second element intermediate said member of said first element and said member of said second element and having a pair of shoulders, each axially engaging one of said member of said first element and said member of said second element, said wire spring having opposite axial end coils, and wherein each of said coils is sufficiently large wherein it cannot pass through a corresponding aperture defined by one of said looped extensions, said wire spring includes a plurality of intermediate coils and wherein said looped extensions define planes angled relative to one another so that as said looped extensions engage said end coils and compress said spring, said coils are urged away from the door.

4,438,545

STUFFING METHOD AND APPARATUS

Vytautas Kupcikevicius, and Vytas A. Raudys, both of Chicago, Ill., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 12, 1981, Ser. No. 273,278
Int. Cl.³ A22C 11/00
U.S. Cl. 17—49 **23 Claims**



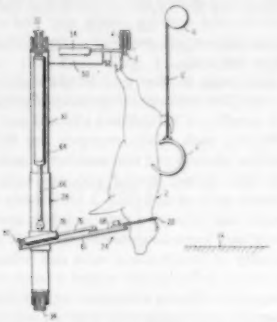
1. A method of stuffing a flowable product into casing lengths deshirred from a shirred casing supply having a closed first tie end comprising the steps of:
a. stuffing a desired amount of the product into the casing supply while applying a holdback force to the casing to achieve a desired stuffed pressure;
b. constricting the encased product with closely spaced first tie and second tie gates to close the second tie end of the encased product;
c. prior to completion of the constricting step creating slack in the casing supply so that the stuffed product displaced during constricting is forced into the slack casing and the encased product pressure is not substantially increased;
d. separating the first tie and second tie constricting gates while gripping the casing more tightly with the second tie gate than with the first tie gate so that the product displaced during separating is displaced into the slack casing and the encased product pressure is not substantially increased; and
e. applying second tie and first tie clips, severing the casing therebetween and releasing the gates.

4,438,546

HEAD HOLDING METHOD AND APPARATUS FOR A HIDE PULLER

William F. Couture, Amarillo, Tex., assignor to Iowa Beef Processors, Inc., Dakota City, Nebr.

Filed Sep. 28, 1981, Ser. No. 306,637
Int. Cl.³ A22B 5/16
U.S. Cl. 17—50 24 Claims



19. A method of holding down the head of an animal carcass while the hide of the carcass is pulled hindwardly of the carcass by a hide puller, comprising the steps of,

supporting the carcass,

moving the carcass on trolleys on a horizontal rail,

engaging the neck of a carcass on the support with a jaw assembly which includes a pair of jaws which are movable from an open position to a closed position,

said engaging step being performed by placing said jaws in said open position, positioning the neck of a carcass between said jaws, and moving said jaws with an actuator to a closed position to entrap the neck of a carcass therebetween,

moving said jaw assembly in a direction which is generally parallel to said rail, said step of moving the jaw assembly being performed by engaging the trolley with an interlock member which is connected to the jaw assembly so that the jaw assembly is driven forwardly by forward movement of the trolley, and

pulling the hide of the carcass in a hindward direction while said jaws deter movement of the head of the carcass.

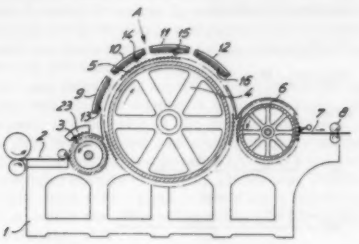
4,438,547

CARDING ELEMENT FOR A CARDING MACHINE

Karl H. Schmolke, Neuweiler; Joachim Finsterbusch, Backnang, and Walter Loffler, Neubulach, all of Fed. Rep. of Germany, assignors to Hollingsworth GmbH, Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,335
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3112491; Oct. 28, 1981, 3142780
Int. Cl.³ D01G 15/24, 15/88
U.S. Cl. 19—98 6 Claims

1. In a carding machine having a main cylinder with saw-tooth wire wound therearound and at least three carding elements each comprising a plurality of saw-tooth wire sections arranged in parallel relationship on a fixed support and forming a card clothing cooperating with said main cylinder, the improvement wherein the saw-tooth wire sections of a first and second of said carding elements are positioned at an acute angle with respect to a diameter plane of said main cylinder with the pitch of the wire sections of said first carding element in a direction opposite that of the pitch of the wire sections of said second carding element, and wherein the saw-tooth wire



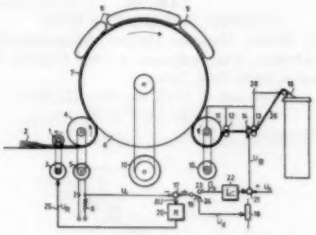
sections of said third carding elements are positioned parallel to a diameter plane of said main cylinder.

4,438,548

METHOD AND APPARATUS FOR CONTROLLING FLUCTUATIONS IN SLIVER WEIGHT ON CARDS, CARDING MACHINES AND THE LIKE

Werner Grunder, Moenchaltorf, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

PCT No. PCT/CH80/00117, § 371 Date Aug. 7, 1981, § 102(e) Date Aug. 7, 1981, PCT Pub. No. WO81/02029, PCT Pub. Date Jul. 23, 1981
PCT Filed Sep. 30, 1980, Ser. No. 293,221
Claims priority, application Switzerland, Jan. 17, 1980, 392/80
Int. Cl.³ D01H 5/38
U.S. Cl. 19—105 16 Claims



1. A method for controlling fluctuations in sliver weight on a device for processing a fiber sliver, wherein a fibrous material is fed to a card, or the like and is withdrawn as a sliver, comprising the steps of measuring the torque or the power of at least one rotating part of the card, or the like, upon which a fiber material is leveled and distributed and producing a control signal indicative thereof; and controlling the rate at which said fibrous material is fed as a function of said control signal in a manner that said torque, or said power, is held to a control value.

4,438,549

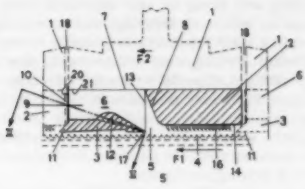
ARRANGEMENT OF FITTINGS FOR FLATS IN A CARDING MACHINE

Keijo Silander, Styrestagatan 8, SE 60229 Norrkoeping, Sweden

Filed Jan. 13, 1982, Ser. No. 339,248
Int. Cl.³ D01G 15/32
U.S. Cl. 19—107 14 Claims

1. A carding machine for carding and for removing contaminants from a fibrous material, comprising a rotatably supported carding cylinder rotationally driven in a forward direction at a first speed and having first carding means on the peripheral

surface thereof, a flat supported adjacent the peripheral surface of said carding cylinder for movement in said forward direction at a second speed less than said first speed and having second carding means on a first surface thereof which faces said carding cylinder, means defining a first opening in said first surface of said flat, a second surface provided on said flat and having a second opening therein, said second opening communicating with the ambient air surrounding said carding machine, means defining a passageway through said flat which communicates with said first opening and with said second opening, said passageway extending away from said first opening at least partly in said forward direction, and means on said flat defining a filter at a location remote from said first opening for filtering the air flowing through said passageway, said first carding means, in response to rotation of said carding cylinder at said first speed, entraining air situated between said carding cylinder and said flat and causing it to flow in said forward direction and into said first opening and said passageway and through said filter, contaminants from said fibrous material being carried by said air flow into said passageway, being filtered from said air flow by said filter and being thus retained in said passageway in said flat.



4,438,550

LOCKABLE SLIDER FOR SLIDE FASTENERS

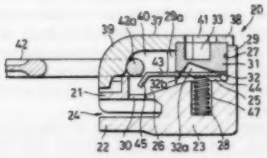
Kiyoshi Oda, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 356,232

Claims priority, application Japan, Mar. 16, 1981, 56-35304[U]

Int. Cl.³ E05B *67/38*

U.S. Cl. 70—57 **6 Claims**



1. A lockable slider for a slide fastener including a pair of coupling element rows to which the lockable slider is adapted to be locked by a separate key, the lockable slider comprising:

(a) a slider body having a Y-shaped guide channel for the passage of the pair of coupling element rows, an upwardly opening forward bore, an upwardly opening rearward recess communicating with said forward bore, and an aperture in said rearward recess in communication with said guide channel;

(b) a cylindrical plug turntable by the separate key and engageable with its outer end, said plug being rotatably received in said forward bore and rotatable for 360° in either direction from any starting position, and having at the inner end a cam face including a recessed central portion and a continuous flat peripheral portion of constant height surrounding said central portion;

(c) a cover mounted on said slider body and enclosing said forward bore, said cover having a keyhole in registry with said forward bore;

(d) a pull tab pivotably connected to said cover;

(e) a locking member supported within said forward bore and said rearward recess and having the fore end held beneath said cylindrical plug for sliding movement along said cam face, and being movable into and out of said recessed central portion in response to rotation of said cylindrical plug in either direction, and having at the rear end, a locking pawl movable into and out of said guide channel through said aperture for engagement between coupling elements; and

(f) a spring member within said forward bore immediately under the fore end of said locking member and urging the fore end of said locking member against said cylindrical plug so that the fore end of said locking member is held by said spring member against diametrically opposite portions of said flat continuous portion to hold said pawl retracted, and is held by said spring member against the bottom of said recessed central portion to hold said pawl in an extended position.

4,438,551

LOCKING DEVICE FOR VEHICLE SEAT BELT WEBBING

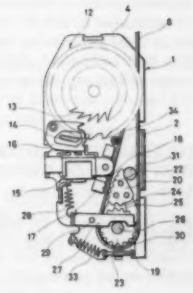
Hironobu Imai, Chigasaki, Japan, assignor to NSK-Warner K.K., Japan

Filed Feb. 3, 1982, Ser. No. 345,413

Claims priority, application Japan, Feb. 27, 1981, 56-26804[U]

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 24—68 SB **5 Claims**



1. A locking device for vehicle seat belt webbing, comprising a housing; a clamp member fixedly secured on the housing; a swing arm swingably supported on the housing; a swing clamp integrally secured on the swing arm having first and second surfaces which make an acute angle and being displaceable between a first position where the swing clamp permits free passage of the webbing and a second position where the webbing is clamped between the clamp member and the first surface so as to restrain the webbing from movement; guide means adapted to guide the swing clamp along the second surface thereof between the first position and the second position; a drum rotatably mounted on a shaft; which extends between slots formed in the swing arm, and displaceable while being guided by the slots between a non-engagement position where the drum is disengaged from the swing clamp and an engagement position where the drum is engaged with the swing clamp and prevented from rotation; and the drum being displaceable from the non-engagement position to the engagement position when a tensile force of at least a predetermined value is applied to the webbing and, when a further tensile force is exerted on the webbing, the swing arm moving toward the clamp member and the second surface of the swing clamp being guided by the guide means so that the swing clamp

moves together with the drum which is at the engagement position, from the first position to the second position.

4,438,552

PLASTIC FASTENER

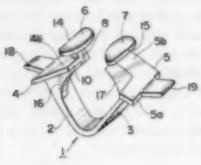
Nobuaki Omata, Hiroshima, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Dec. 10, 1981, Ser. No. 329,487

Claims priority, application Japan, Dec. 12, 1980, 55-174736

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—297 **4 Claims**



1. A one piece plastic fastener comprising: a resilient insertion leg formed of a pair of leg pieces joined integrally to each other in the general shape of the letter V and each provided on the outer side thereof with an engaging part, a flange formed of a pair of plate-shaped pieces disposed at the free ends of said leg pieces, and a head portion consisting of a pair of head pieces disposed at the leading ends of shanks extended upwardly from said plate-shaped pieces, said head portions initially being spaced apart in predetermined orientation, said head pieces being interengageable by a twisting movement of said head pieces past each other to lock behind one another in reverse orientation, said head pieces being urged toward each other by said resilient leg, whereby separation of said head pieces causes movement of said leg pieces toward each other.

4,438,553

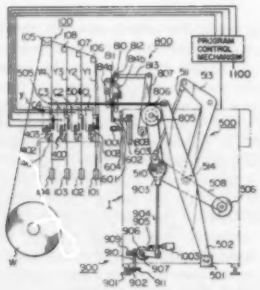
FULL AUTOMATIC LEASING MACHINE FOR A WARP BEAM CONTAINING WARPS OF DIFFERENT COLORS

Shoichi Hamada, Otsu, Japan, assignor to Todo Seisakusho Ltd., Japan

Filed Feb. 10, 1981, Ser. No. 233,195

Int. Cl.³ D02H *9/00*; **D03J** *1/13*

U.S. Cl. 28—184 **12 Claims**



1. A fully automatic leasing machine for a warp beam containing warps of different colors, comprising:

a warp grouping mechanism located at a position downstream of said warp beam in the processing direction of said warps, and adapted for grouping said warps into warp sheets of different colors and releasably holding ends of said warps in said warp sheets, said warp sheets being disposed in substantially parallel planes which are spaced apart and extend in the width direction of said machine;

a number of warp dividing units equal in number to the number of warp sheets, each dividing unit being associated with a respective warp sheet and being movable along its associated warp sheet in said width direction of said machine;

a respective warp dividing unit driving mechanism for each said warp dividing unit, each said warp dividing unit driving mechanism including a main shaft driven for continuous rotation, means for converting said rotation of said main shaft into movement of its respective said warp dividing unit along its said associated warp sheet, and means for selectively disabling said converting means;

a respective warp separating mechanism arranged on each said warp dividing unit, and including first and second cooperating needles for separating individual warps from said associated warp sheet, first operating means for operating said needles, and a first single revolution clutch assembly which when energized operationally couples said operating means to said main shaft of said warp dividing unit driving mechanism;

a respective warp flipping mechanism accompanying each said warp separating mechanism, and including a warp flipping carrier for flipping said each warp separated from said associated warp sheet, second operating means for operating said warp flipping carrier, and a second single revolution clutch assembly which when energized operationally couples said second operating means to said main shaft of said warp dividing unit driving mechanism;

a program control mechanism for energizing said first and second single revolution clutch assemblies on each said warp dividing unit in accordance with a desired stripe design;

a warp leasing unit arranged on the downstream side of said warp dividing units in an arrangement movable in the width direction of said machine;

a warp passing mechanism arranged on said warp leasing unit, and including a crank shaft driven for constant rotation and a hook which is operationally coupled to said crank shaft and reciprocates horizontally between said warp leasing unit and said warp dividing units in order to pass said each warp which is engaged by a said first warp flipping mechanism through a gap between a pair of warp leasing cords stretched in the width direction of said machine;

a leasing cord shifting mechanism arranged on said warp leasing unit, and including a pair of lifter rods which are operationally coupled to said crank shaft of said warp passing mechanism and to said warp leasing cords in order to alternately locate said warp leasing cords at different respective levels every time one of said warps has been passed through said gap;

a second warp flipping mechanism arranged on said warp leasing unit, and including a flipping bar operationally coupled to said crank shaft of said warp passing mechanism;

a warp end fixing mechanism arranged on said warp leasing unit including a pair of rolls of bonding tape which, as said leasing unit travels in the width direction of said machine, are delivered from said rolls and fixedly hold therebetween each said warp passed through said gap, said flipping bar flipping each said warp passed through said gap towards said warp end fixing mechanism;

a warp leasing unit driving mechanism accompanying said warp leasing unit, and including means for converting rotation of said crank shaft of said warp passing mechanism into movement of said warp leasing unit in said width direction of said machine; and

a synchronized driving mechanism including a photoelectric sensor for detecting movement of any said warp dividing unit in said width direction of said machine, and means connected to said photoelectric sensor for disabling said converting means of said warp leasing unit dividing mech-

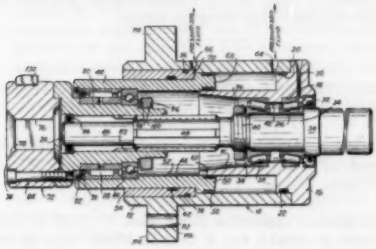
anism when no warp dividing unit moves in said width direction of said machine.

4,438,554

RAM DRIVE CHUCK

Joseph Sciola, 98 Glenwood Dr., North Heldon, N.J. 07058, and Gabor Nagy, 98 W. First St., Clifton, N.J. 07011

Filed May 18, 1981, Ser. No. 265,034
Int. Cl.[3] B23P 5/00; B65H 17/02
U.S. Cl. 29—57 5 Claims



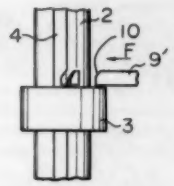
1. In a ram drive chuck for the driven rotation of workpieces and including a housing and a drive shaft supported for rotation in said housing, the improvements comprising, workpiece driving means which are operable to drivingly engage, support and rotate a workpiece, means slidably supporting said workpiece driving means at least in part within said housing, means rotatably supporting said workpiece driving means at least in part within said housing, said workpiece driving means being slidably drivingly engaged by said drive shaft for driven rotation of the workpiece driving means by the drive shaft, said workpiece driving means being slidable relative to said housing between an extended workpiece driving means position wherein the workpiece driving means are operable to drivingly engage, support and rotate an appropriately positioned workpiece, and a retracted workpiece driving means position wherein the same are not operable to drivingly engage, support and rotate said appropriately positioned workpiece whereby, with a workpiece appropriately positioned relative to said ram drive chuck and said workpiece drive means disposed in the retracted position thereof, the workpiece drive means may be slided to the extended position thereof to drivingly engage, support and rotate said workpiece and, thereafter, slided to the retracted position thereof to disengage from said workpiece, said workpiece drive means comprising a drive socket which is shaped and sized complementally with regard to an end of said workpiece whereby, movement of said workpiece into said extended position thereof is effective to engage said workpiece end in said drive socket for support and rotation of said workpiece, said workpiece drive means and said chuck drive shaft being relatively arranged and disposed so that said drive shaft extends substantially into said workpiece drive means drive socket when said workpiece drive means are in the retracted position thereof whereby, said workpiece end will be forced from said drive socket upon movement of said workpiece drive means from the respective extended to retracted positions thereof thus insuring workpiece end-workpiece drive means disengagement.

4,438,555

METHOD OF FIXING AN ANNULAR ELEMENT ON A SHAFT

Chiaki Tsumuki; Katsuhiko Ueda, both of Aichi; Hitoshi Nakamura, Toyota; Toshiyuki Nakura, Okazaki, and Kazuhiko Tsuda, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Mar. 9, 1982, Ser. No. 356,347
Claims priority, application Japan, Sep. 22, 1980, 55-130587
Int. Cl.[3] B21D 39/00; B23P 11/00
U.S. Cl. 29—505 5 Claims



1. Method for fixing an annular element onto a shaft, said element having a through hole into which said shaft is loosely inserted, said method comprising the steps of: forming an axially extending groove on an outer wall of said shaft and forming an axially extending projection on an inner surface of said hole of said element over the whole length thereof, said groove and said projection having respective cross sections being adapted so as to loosely fit together; inserting said shaft into said hole while engaging said projection with said groove so as to prevent a relative rotating motion; and after determining the axial position of said element relative to said shaft, deforming said outer wall of said shaft adjacent to said groove at two positions near the terminating ends of said projection so that said outer wall protrudes into said groove, thereby fixing said element onto said shaft.

4,438,556

METHOD OF FORMING DOPED POLYCRYSTALLINE SILICON PATTERN BY SELECTIVE IMPLANTATION AND PLASMA ETCHING OF UNDOPED REGIONS

Shigeru Komatsu, Yokohama, and Michio Nakamura, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 21, 1981, Ser. No. 332,973
Claims priority, application Japan, Jan. 12, 1981, 56-2988; Apr. 9, 1981, 56-53393
Int. Cl.[3] H01L 21/302, 21/225; C23F 1/02
U.S. Cl. 29—576 B 16 Claims

1. A process of forming a polycrystalline silicon pattern which comprises the steps of:

selectively ion-implanting an impurity with high concentra-

tion into the region of a polycrystalline silicon layer, which is to remain as a polycrystalline silicon pattern; and plasma-etching the whole of said polycrystalline silicon layer, thereby etching off the areas other than said region into which said impurity is ion-implanted with high concentration.

4,438,557

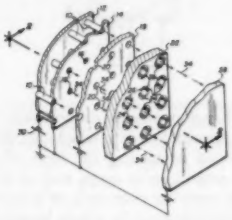
METHOD OF USING AN AREAL ARRAY OF TUBULAR ELECTRON SOURCES

Donald L. Parker; Wilbur A. Porter, and Robert C. Rogers, all of College Station, Tex., assignors to Woodland International Corporation, Panama, Panama

Division of Ser. No. 34,984, May 1, 1979, Pat. No. 4,333,035. This application Jan. 27, 1982, Ser. No. 343,023

Int. Cl.³ H01J *21/263, 37/00;* **G01N** *23/00*

U.S. Cl. 29—576 B **1 Claim**



1. A method for irradiating a semiconductor body with a plurality of electron beams for use in the fabrication of integrated circuits, comprising the steps of:

generating a plurality of parallel electron beams within an evacuated zone which contains said semiconductor body, said electron beams directed toward said semiconductor body; and

simultaneously deflecting said electron beams to cause each of said electron beams to track a predetermined pattern on said semiconductor body.

4,438,558

LAMINATED CORE MANUFACTURING APPARATUS

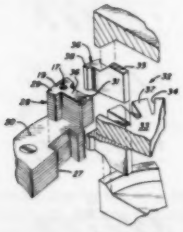
Yoshiaki Mitsui, c/o Mitsui Mfg., Co., Ltd., 980-1 Komine, Yahatanishi-ku Kitakyushu-shi, Japan

Continuation of Ser. No. 30,445, Apr. 16, 1979, Pat. No. 4,280,275, which is a division of Ser. No. 819,480, Jul. 27, 1977, Pat. No. 4,149,309. This application Aug. 9, 1981, Ser. No. 232,653

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ H02K *15/085, 15/02*

U.S. Cl. 29—732 **5 Claims**



1. Apparatus for manufacturing a dynamoelectric machine wound core from a plurality of stacks of teeth having a shank portion and a head portion, and stacked yoke laminations each having an annular array of radially inwardly opening recesses, said stacked teeth being arranged in an annular array to define an annular tooth core arrangement having a plurality of winding slots, said stacked yoke laminations defining an annular yoke core, said apparatus comprising:

jig means defining a core bar and an annular array of individual locking pieces disposed coaxially about said core bar;

means for forcibly urging said locking pieces radially inwardly toward said core bar, said locking pieces defining urging means for engaging the base portions of the stacked teeth to urge said base portions forcibly against said core bar for temporarily retaining said stacked teeth accurately in annularly spaced relationship thereon to define therebetween an annular array of winding slots in which a dynamoelectric winding may be wound to define a wound tooth core assembly, said wound tooth core assembly being constructed to be disposed coaxially within said yoke core with the head portions of said retained stacked teeth of the wound tooth core assembly being rigidly interlocked with said yoke core in said yoke core recesses to define a rigid, strong dynamoelectric machine core upon removal of the entire jig means.

4,438,559

APPARATUS FOR AUTOMATICALLY MOUNTING NON-LEAD ELECTRONIC COMPONENTS ON PRINTED-CIRCUIT

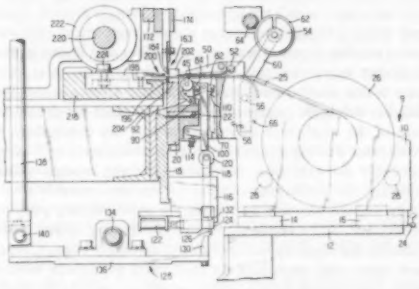
Koichi Asai, Nagoya; Kunio Oe, Chiryu, and Mamoru Tuda, Okazaki, all of Japan, assignors to Fuji Machine Mfg. Co. Ltd., Chiryu, Japan

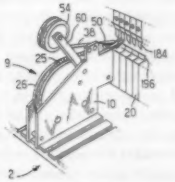
Filed Jun. 25, 1981, Ser. No. 277,105

Claims priority, application Japan, Jun. 27, 1980, 55-88326; Aug. 6, 1980, 55-108613; Aug. 9, 1980, 55-109587; Aug. 20, 1980, 55-114274

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—740 **10 Claims**





1. An apparatus for automatically mounting on a workpiece electronic components having no leads, and thereby forming an electronic circuit on the workpiece, which comprises:

a supply assembly including a plurality of tape cartridges disposed on a support means and being equally spaced along a line of transfer of the electronic components, said tape cartridges accommodating a corresponding number

of electronic component carrying tapes to store and supply different types of said electronic components, each of said carrying types including a strip member which has a multiplicity of longitudinally spaced mutually independent apertures in which said electronic components of a respective type are stored, said apertures being covered with a covering tape disposed over said strip member;

a transfer assembly disposed on said support means including a transfer member having a plurality of grippers disposed along said line of transfer to hold a leading portion of said carrying tapes accommodated in said respective tape cartridges, and further including drive means disposed on said support means and being adapted to move in an intermittent manner said transfer member along said line of transfer for sequential alignment with component supply portions of said plurality of tape cartridges, the distance of each movement of said transfer member being equal to the spacing of said component supply portions;

tape feed assemblies disposed on said support means, said feed assemblies provided adjacent and corresponding to said plurality of tape cartridges, each of said tape feed assemblies being activated when one of said grippers is stopped in alignment with one of said component supply portions of said respective tape cartridges, and thereby feeding in an intermittent manner said carrying tape across said line of transfer with said covering tape facing up, the distance of each feeding movement of said carrying tape being equal to the spacing of said multiplicity of apertures;

covering tape separating assemblies disposed on said support means, said separating assemblies provided adjacent and corresponding to said plurality of tape cartridges, for separating said covering tape from said carrying tape and thereby uncovering at least a leading one of said multiplicity of apertures;

carrying tape severing assemblies, disposed on said support means and between each of said component supply portions of said tape cartridges and said grippers, for cutting off said leading portion of said carrying tape which includes said uncovered leading aperture, and which is held in said grippers, the cut-off leading portion constituting a unit carrying tape;

a loading assembly disposed on said support means, said loading assembly equipped with a pick-up member, for picking up with said pick-up member said component from said uncovered aperture in said unit carrying tape which has been transferred by said transfer member to a specified position, and mounting said component on said workpiece; and

a positioning assembly disposed on said support means for establishing desired relative positions between said pick-up member and said workpiece before said component is mounted on the workpiece by said loading assembly.

4,438,560

METHOD FOR PRODUCING MULTIPLANE CIRCUIT BOARDS

Günter Kisters, Issum, Fed. Rep. of Germany, assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed May 27, 1981, Ser. No. 267,654

Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020196

Int. Cl.³ H05K *3/36*

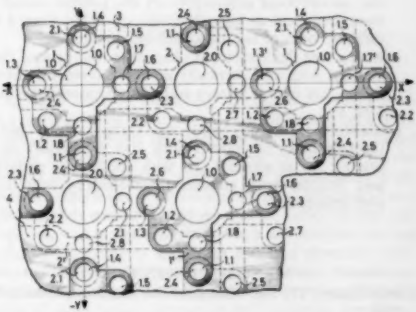
U.S. Cl. 29—830 **10 Claims**

1. Method of producing multiplane circuit boards, characterized by the fact that a planar member A is prepared first on a layer of suitable carrier material, said planar member A having connecting areas disposed in rows on said planar member A, each of said areas having an insertion position, six interlinking positions and two interrupting positions, said interlinking positions, based on the center point of the insertion position of each connecting area, having the coordinates −8R, O; 12R, O; O, 8R; O, −12R; −6R, −6R; 6R , 6R, and said interrupting positions having the coordinates 7R, O and O, −7R, with R being any selectable standard grid spacing, and said rows of connecting areas having between each other a spacing of 2OR and adjacent insertion positions in one row having between each other a spacing of 4OR;

that a planar member B is prepared, said planar member B per se having the same pattern as planar member A, however, with the two planar members A and B being arranged one on top of the other in a manner such that the connecting areas of planar member B bridge the spacing between those of planar member A, so that associated connecting positions of the connecting areas on the two planar members A and B coincide when viewed from the top;

that a planar member C is prepared, said planar member C being provided with trains of conductors parallel to the X-axis with a spacing of 2OR between said trains of conductors; that said planar member C is disposed in relation to planar members A and B in a way such that the center lines of each of their trains of conductors coincide with the imaginary connecting line through the center points of the associated connecting positions with the coordinates −6R and −6R;

that a planar member D is prepared, said planar member D being provided with trains of conductors extending parallel to the Y-axis and having a spacing of 2OR between



each other, and said planar member D being disposed in relation to planar members A and B in a way such that the center lines of each of their trains of conductors coincide with the imaginary connecting line through the center points of the associated connecting positions with coordinates 6R and 6R;

that the planar members A, B, C and D disposed as defined above are combined to form one mechanical unit, if necessary with the use of an intermediately arranged, suitable insulating material such as prepregs;

that one or a plurality of such units are provided with a pattern of conductor trains conforming with the desired circuit;

that defined connecting positions are provided with bores in accordance with the circuit diagram, said bores being provided in a manner known per se with a metal coating applied to their walls;

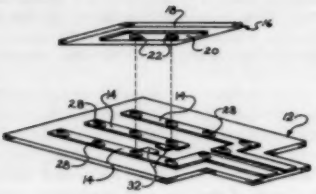
that bores are provided in the insertion positions determined by the circuit diagram, said bores being provided with metallized walls also; and furthermore,

that the trains of conductors on the planar members C and D are separated into partial pieces insulated against each other, by means of bores provided in the interrupting positions determined by the circuit diagram.

4,438,561
METHOD OF REWORKING PRINTED CIRCUIT BOARDS

Richard W. Mueller, Santa Clara, Calif., assignor to Rogers Corporation, Rogers, Conn.

Filed Oct. 1, 1981, Ser. No. 307,197
Int. Cl.³ H05K 3/20
U.S. Cl. 29—831 7 Claims



1. A method of connecting electrically unconnected conductors on a printed circuit element with conductors on a flexible circuit element, including the steps of:

forming said flexible circuit element having a nonconductive substrate and a predetermined circuit pattern;

defining at least two through holes in said circuit pattern;

aligning said flexible circuit with respect to said printed circuit element with said circuit pattern facing said unconnected conductors, said circuit pattern being aligned with the unconnected conductors on the printed circuit element with said at least two through holes aligned with different ones of said unconnected conductors;

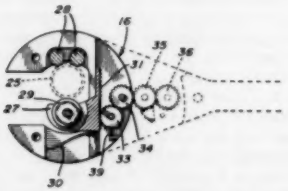
adhering said flexible circuit element to said printed circuit element with an electrically nonconductive adhesive between said circuit pattern and said unconnected conductors; and

establishing electrically conductive paths in said at least two through holes in contact with said conductors on the printed circuit element and with said circuit pattern on said flexible circut element to electrically interconnect said conductors.

4,438,562
MANUAL PIPE CUTTER

Aurele Courty, 471 Ste. Madeleine St., Montreal, Canada H3K 2K8

Filed Aug. 6, 1982, Ser. No. 405,943
Int. Cl.³ B23D 21/06
U.S. Cl. 30—99 11 Claims

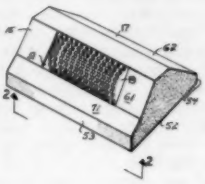


1. A manual pipe cutter comprising a body including a cutting head portion having a pipe passage extending therethrough, a cutting head rotatable in the cutting head portion substantially around the pipe passage, a cutter-pressing jaw mounted on the cutting head and displaceable in a predetermined direction transversely across relative to the pipe passage, a toothed rack fixedly secured to the cutter-pressing jaw and displaceable bodily with the latter and endwise in said predetermined direction, a ratchet and gear system connected to the toothed rack and constructed and arranged to move and hold the latter relative to operative displacement of the cutter-pressing jaw in said predetermined direction, and a manual actuator mounted on said body, connected to the ratchet and gear system and constructed and arranged to actuate the same and produce the operative displacement of the cutter-pressing jaw in said predetermined direction.

4,438,563
HAND-HELD CUTTING TOOL

David D. Turner, 7845 NE. Bayshore Ct., Miami, Fla. 33138

Continuation-in-part of Ser. No. 240,082, Mar. 3, 1981, abandoned. This application Dec. 10, 1982, Ser. No. 433,161
Int. Cl.³ B26B 1/04, 3/08
U.S. Cl. 30—156 11 Claims



1. A hand-held cutting tool comprising:

(A) a housing with a top wall, spaced end walls, and a front and rear wall, said housing defining a bottom to rest in planar relation on a surface and said bottom having an open mouth of predetermined dimension,

shaft holding means in the housing defining an axis,

(B) a blade cartridge in the housing, said cartridge comprising,

a shaft, a plurality of blade members on the shaft, and a plurality of spacer means on the shaft, said blade members and spacer means being arranged along said shaft in staggered relation with respect to one another,

said shaft being secured in said housing by said shaft holding means,

said plurality of blade members being swingable on the shaft and each being of a common size and shape and each having a cutting edge,

each of said spacer means including a blade member orienting means and each one of said blades being captivated by the orienting means of one of said spacer means for swinging movement about the shaft so that each of the spacer means may be selectively rotated to swing its associated blade members about the shaft between a first position and a second position;

each of said blade members being of a size and shape such that the cutting edge is exposed beneath the bottom of the tool housing when in the first position and each of the blade members is completely within the housing when the blade member is in the second position;

said housing including stop means to stop swinging movement of the blade members at each of the two positions.

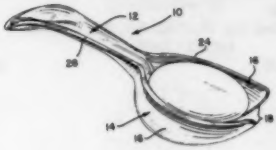
4,438,564
EGG SCOOP OR SPOON

Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Jul. 9, 1976, Ser. No. 703,718
The portion of the term of this patent subsequent to Aug. 16, 1994, has been disclaimed.
Int. Cl.³ A47J 43/28
U.S. Cl. 30—324 3 Claims

1. An egg spoon suitable for the introduction of eggs into or the removal of eggs from a body of fluid comprising a handle member integrally formed as a part of a spoon bowl and protruding therefrom, said bowl including a bifurcated and concave wall configuration having frontal edges and an interconnected back wall which is of a substantially vertical disposition

and wherein said bifurcated and concave wall configuration and said back wall include bottom edges positioned in the same plane, and wherein said bifurcated and concave wall configuration includes upper edges, said upper edges sloping in an



upward direction from said frontal edges toward said back wall in such fashion that the imaginary, forward, geometrical extension of said plane makes an acute angle with the imaginary, forward, geometrical extension of said upper edges thereby forming the slope of such upper edges.

4,438,565

HANDLE FOR A HAND TOOL

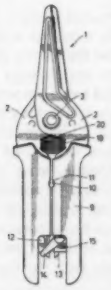
John A. Hough, Auckland, New Zealand, assignor to Hough Industries Limited, Auckland, New Zealand

Filed Jun. 18, 1980, Ser. No. 160,484

Claims priority, application New Zealand, Jun. 20, 1979, 190779

Int. Cl.³ B25G *1/00*

U.S. Cl. 30—341 **14 Claims**



1. In a hand tool having at least one shank and attached handle, the improvement comprising:

an infill member enclosing and having means to interlock with the shank, and

a sheath of uniform thickness having a recess and enclosing both the shank and the interlocked infill member and having means to be fixed to either,

wherein said infill member has a narrow portion at one end, parallel to the longitudinal axis of the handle, which extends across the recess in the sheath to provide an eye through which an attachment means may pass in order to be pivotally attached to the handle.

4,438,566

INNER DIAMETER MEASURING INSTRUMENT

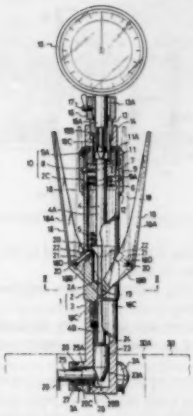
Hideo Sakata; Ichiro Mizuno, and Masao Nakahara, all of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1982, Ser. No. 369,777

Claims priority, application Japan, Apr. 30, 1981, 56-62770[U]; Apr. 30, 1981, 56-65705

Int. Cl.³ G01B *5/12*

U.S. Cl. 33—178 R **11 Claims**



1. An inner diameter measuring instrument wherein a spindle is axially movably incorporated in a cylindrical main body and measuring elements are made linearly movable in radial directions perpendicular to said spindle in response to the movement of said spindle, wherein the improvement comprises: a movable member movable in the axial direction of said spindle; a spring provided between said movable member and said spindle, said spring being biased in a direction for causing said measuring elements to project in radial directions with respect to said spindle; a control member rotatably mounted on said main body; an interlocking mechanism for transmitting the rotation of said control member to said movable member to cause axial movement of said movable member; and control means for moving said spindle in a predetermined direction against the action of said spring, said control means being rotatably secured to said main body.

4,438,567

CENTER LOCATOR FOR ALIGNMENT OF WORK TO MACHINE SPINDLE

Antti P. Raiha, Rte. #1, Box 512, Sandpoint, Id. 83864

Filed Dec. 7, 1981, Ser. No. 327,923

Int. Cl.³ G01C *1/00*

U.S. Cl. 33—286 **2 Claims**

1. A center locator for use with a drill press or like tool having a rotatable spindle and a chuck or other tool holder attached to an end of the spindle:

(a) a case or housing of electrically conductive material having a shank for coaxial connection to said chuck or tool holder;

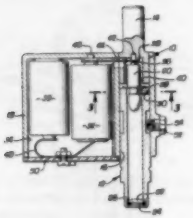
(b) said case having a bore aligned with the shank axis;

(c) a barrel part guidingly mounted in said case bore for angular movement about said shank and bore axis, as well as for axial movement therein, said barrel part being made of electrically conductive material;

(d) said barrel part having an annular groove;

(e) a retractable hollow screw mounted on the case and cooperable with said annular groove for limiting axial movement of said barrel part;

(f) An incandescent lamp having a bulb part extending into the inner end of the barrel and having a flange of electrically conductive material in engagement with the said end of the barrel part, said lamp having a contact button located beyond the inner end of the barrel;
(g) means cooperable with the lamp bulb for holding the lamp to the barrel, comprising three relatively soft plastic screws adjustable to center the lamp at the axis;
(h) a magnifying lens accommodated in the opposite outer end of the barrel and fitted against a shoulder in the barrel;



(i) a resilient O-ring frictionally fitted in the barrel releasably to hold the lens in place;
(j) said lens having pattern means imprinted or otherwise formed thereon;
(k) spring contact means carried by the case for engagement with said lamp contact button upon axial movement of said barrel;
(l) a coiled contact spring in said screw and in continuous wiping contact with said barrel part; and
(m) batteries carried by the case and imposing an electrical potential between the case and said spring contact means.

4,438,568

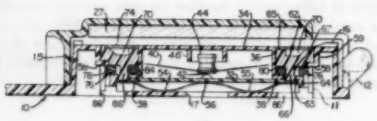
RECREATIONAL COMPASS

Melvin G. Kramer, and Marlin Iden, both of Riverton, Wyo., assignors to The Brunton Company, Riverton, Wyo.

Continuation-in-part of Ser. No. 129,907, Mar. 13, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,208

Int. Cl.[3] **G01C** *17/20, 17/12*

U.S. Cl. 33—348 **18 Claims**



1. In a compass having a base member and a compass needle journaled in a transparent casing, said casing provided with an outer peripheral wall portion and top and bottom wall portions, said base member including an upstanding annular housing wall, the improvement comprising:

retention means operative to resiliently mount said casing within said housing wall of said base member including first and second complementary locking means each including a pair of generally ring-like, radially expandible and contractable members on said retention means, an external shoulder on said peripheral wall portion of said casing and an internal shoulder on said housing wall of said base member, said ring-like members of said first and second complementary locking means being movable past said external and internal shoulders to expand outwardly behind said shoulder into yielding engagement with said peripheral wall portion of said casing and housing wall of said base member, respectively, whereby to retain said casing against removal from said housing wall while permitting said retention means to be manually rotated by overcoming the frictional engagement of said ring-like member betwen said retention means and said housing wall.

4,438,569

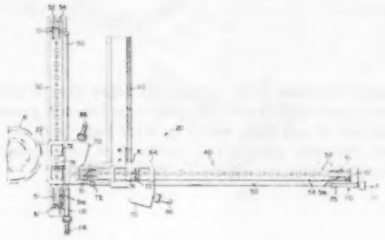
DRAFTING MACHINE

Walter Weglin, Bellevue, Wash., assignor to Robert J. Gillespie, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 428,726

Int. Cl.[3] **B43L** *13/00*

U.S. Cl. 33—438 **26 Claims**



1. A drafting machine for use with a drafting table having a drawing surface, which comprises:

a protractor head adapted to be movably mounted on a drafting table such as to permit horizontal and vertical movement of the protractor head along the drawing surface of the drafting table;

an elongated first mounting means rotatably mounted on the protractor head and having an elongated first reference scale, the longitudinal axis of the first reference scale being parallel to the longitudinal axis of the first mounting bar;

an elongated second mounting means slidably mounted on the first mounting means with the longitudinal axis of the second mounting means being perpendicular to the longitudinal axis of the first mounting means, the second mounting means having an elongated second reference scale, the longitudinal axis of the second reference scale being parallel to the longitudinal axis of the second mounting means;

first and second elongated straight edges, said first straight edge being slidably mounted with respect to the second mounting means and the second straight edge, the longitudinal axis of the first straight edge being parallel to the first mounting means and being perpendicular to the longitudinal axis of the second mounting means and to the second straight edge, the first straight edge being alignable with the reference scale of the second mounting means; and

said second straight edge being mounted on the second mounting means so as to be slidably mounted with respect to the first mounting means, the longitudinal axis of the second straight edge being perpendicular to the longitudinal axis of the first mounting means, the second straight edge being alignable with the first reference scale.

4,438,570

SYSTEM FOR DRYING AND EXPANDING OF FLAT MATERIALS SUCH AS LEATHER

Jiri Dokoupil, Hochstr. 9, 6251 Glückingen, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 241,543

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010003

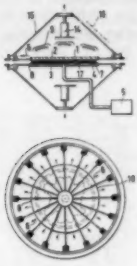
Int. Cl.[3] **F26B** *3/34, 23/04*

U.S. Cl. 34—1 **10 Claims**

1. Process for increasing the surface and for drying of flat materials such as leather pieces and hides comprising:

placing the flat material between two foils impervious to air;

connecting the space between the two foils to a vacuum; and applying forces substantially disposed in the plane of the



two foils for expanding the surface area of the two foils and of the flat material.

4,438,571

ARRANGEMENT FOR DRY COOLING OF COKE

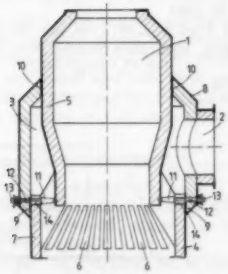
Wilhelm Jakobi, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,102

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1981, 3100168

Int. Cl.³ F26B *17/12*

U.S. Cl. 34—65 **10 Claims**



1. An arrangement for dry cooling of coke, comprising means forming a prechamber for a coke to be cooled and having a substantially cylindrical prechamber wall with an axis; cooling means arranged below said prechamber forming means and having a substantially cylindrical cooler wall, an upper portion of said cooler wall surrounding a lower portion of said prechamber wall; means for connecting said prechamber walls with said cooler wall and including a plurality of connecting members spaced from each other and connecting said walls with each other so that a cooling gaseous medium can pass between said connecting members; throttling means arranged between said connecting members and actuated from outside of said walls; and actuating means extending substantially radially through said cooler wall from outside inwardly of the latter so as to actuate said throttling means.

4,438,572

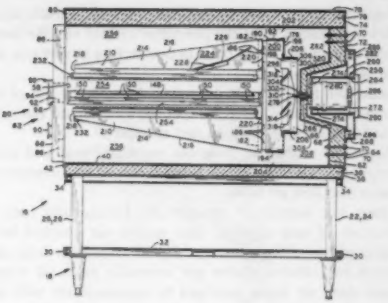
HEAT DUCT SUPPORT ASSEMBLY FOR A FOOD PREPARATION OVEN AND METHOD

Daniel S. Kaminski, Fort Wayne, Ind., assignor to Lincoln Manufacturing Co., Inc., Fort Wayne, Ind.

Filed Jun. 9, 1982, Ser. No. 386,610

Int. Cl.³ F26B *15/18*

U.S. Cl. 34—218 **9 Claims**



1. In a food preparation oven having therein mounted a plenum with a plurality of openings therethrough, and a plurality of heat ducts horizontally disposed from and in communication with said plenum through respective ones of said openings, each of said heat ducts including a plurality of jets positioned therein to direct hot air onto food to be cooked, a support assembly for said heat ducts, comprising:

two stud members, a first one projecting from a side of said oven and a second one projecting from an opposite side of said oven,

an elongated bracket being horizontally disposed between said oven opposite sides and supporting remote ends of said heat ducts,

a pair of bracket supports being connected to respective ends of said bracket adjacent respective ones of said oven opposite sides,

said bracket supports each having a slot therein engaging a respective stud member, whereby said bracket is removably supported by said studs between said oven opposite sides, and

means for supporting opposite ends of said heat ducts over respective ones of said plenum openings.

4,438,573

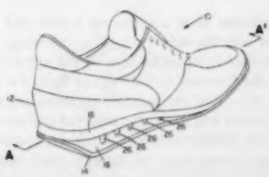
VENTILATED ATHLETIC SHOE

George P. McBarron, Attleboro, Mass., assignor to Stride Rite International, Ltd., Cambridge, Mass.

Filed Jul. 8, 1981, Ser. No. 281,315

Int. Cl.³ A43B *7/06, 13/20*

U.S. Cl. 36—3 B **8 Claims**



1. In an athletic shoe for ventilating the user's foot, having inside said shoe a resilient slipsole above an insole board, and outside said shoe a resilient outsole assembly underneath said insole board, said outsole assembly containing at least one

transverse first air channel open at its ends through the side walls of said outsole assembly to the surrounding air, a system for conveying air from said first air channel into said inside of said shoe comprising:

at least one air reservoir cut vertically into said outsole assembly and spaced from the perimeter of said outsole assembly, said reservoir being closed at its top and its bottom and open through its side wall to said first air channel;

at least one air slot cut longitudinally into said outsole assembly and spaced from the perimeter of said outsole assembly, said air slot being open in one section to said side wall of said air reservoir;

at least one first air hole cut vertically into the top of said outsole assembly at a point spaced from said air reservoir, said first air hole open to said air slot;

at least one second air hole cut vertically into said insole board said second air hole being arranged to communicate with said first air hole;

at least one second air channel cut horizontally into the bottom of said slipsole, said second air channel being arranged to communicate with said second air hole; and

at least two third air holes cut vertically into said slipsole said third air holes arranged to communicate with said second air channel and with the inside of said shoe,

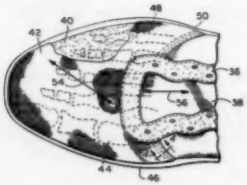
whereby said surrounding air will flow through said first air channel into said air reservoir where a volume of air is held, then into said air slot, then into said first air hole, then into said second air hole, then into said second air channel, then into said third air holes and then into the inside of said shoe to ventilate said user's foot, the force of said user's foot against the ground will enhance the flow of air into said inside of said shoe, and the user's foot will be cushioned from shock.

4,438,574

ATHLETIC SHOE WITH TWO-PIECE UPPER FOREPART SECTION

Jeffrey O. Johnson, Raymond, N.H., assignor to Nike, Inc., Beaverton, Oreg.

Filed Mar. 26, 1982, Ser. No. 362,061
Int. Cl.³ A43B *23/00, 5/00*
U.S. Cl. 36—45 **31 Claims**



1. In an athletic shoe comprising a sole and an upper attached to the sole the improvement comprising:

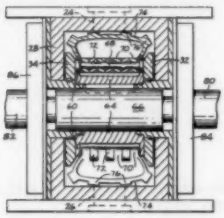
a multi-layered forepart section of the upper for extending around the forepart portion of the foot of a wearer of the athletic shoe, said forepart section including an inner layer of stretchable and moldable material and an outer layer of breathable, flexible and nonstretchable material extending about said inner layer of material, said inner and outer layers being permanently attached to said shoe, a major portion of the inner layer being unconnected to the outer layer whereby the inner layer is free to stretch a degree limited by the extent of the outer layer of nonstretchable material to accommodate and mold to the forepart of the foot of the wearer.

4,438,575

CONTINUOUS EXCAVATING APPARATUS

Jonas L. Roe, Santa Cruz, Calif., assignor to Terradyne Limited, Georgetown, Cayman Islands

Continuation of Ser. No. 93,020, Nov. 9, 1979, abandoned. This application Oct. 20, 1981, Ser. No. 313,155
Int. Cl.³ E02F *5/06*
U.S. Cl. 37—4 **2 Claims**



1. Continuous excavating apparatus comprising:

an endless excavating bucket line having a plurality of excavating buckets each with teeth for digging;

a boom for carrying said bucket line including at its free end a pair of sprockets mounted for rotation on said boom;

a plurality of hinge pins commonly connected to adjacent buckets so that both buckets may freely rotate on a pin and,

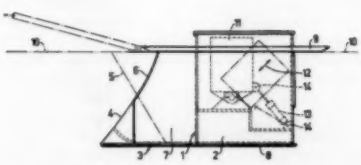
an enlarged end piece at each end of said hinge pins, adapted to contact said pair of sprockets, in operation, and to roll with rolling friction on them to cause the rotation of the center portion of the hinge pins.

4,438,576

VIBRATING DITCHER PLOW

Ove V. Lundström, Box 76, Vuollerim, Sweden S-96030

PCT No. PCT/SE80/00294, § 371 Date Jul. 20, 1981, § 102(e) Date Jul. 20, 1981, PCT Pub. No. WO81/01433, PCT Pub. Date May 28, 1981
PCT Filed Nov. 19, 1980, Ser. No. 285,108
Claims priority, application Sweden, Nov. 19, 1979, 7909545
Int. Cl.³ E02F *5/02*
U.S. Cl. 37—98 **8 Claims**

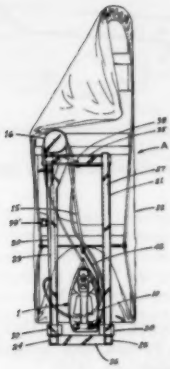


1. A device for ditching a drain in soil, comprising a body which is intended to be advanced in the ground, said body having a substantially V-shaped vertical cross-section with the base of the V pointed downward and substantially smooth lower sides, the body at least in the direction of advancement having a forward portion with a pointed end closed vertically along the height of the body, the forward portion having a generally V-shaped horizontal cross-section, the body being provided with vibrator means for producing striking forces, said vibrator means being adapted to subject the body to at least downward directed striking forces, and said forces maintaining the body pressed down while the body is advanced through the soil masses, the height of the body being greater than the depth of the ditch such that the soil masses are pressed aside substantially laterally and compacted.

4,438,577
IRONING APPARATUS SUPPORT

Edwin E. Foster; Wilbur A. Foster, and Thomas E. Foster, all of Austin, Tex., assignors to Majik-Ironers, Inc., Austin, Tex.

Filed Apr. 20, 1981, Ser. No. 255,888
Int. Cl.³ D06F 71/00
U.S. Cl. 38—107 13 Claims



1. Ironing apparatus for supporting a hand iron above the ironing surface of an ironing board and characterized by a base for supportive disposition upon a supporting surface, at least one upright post member extending upwardly from said base, means for securing an ironing board in a use position proximate said post member with said ironing surface horizontally disposed for ironing thereon, an articulated linkage swingably inter-engaged at one end with said post member and extendable by articulation to positions over said ironing surface, securement means pivotally interconnecting the other, post-remote end of said linkage with said iron for permitting movement of said iron between first and second orientations respectively in and out of contact with said ironing surface, said linkage being swingable about said post member and providing articulation when said iron is in said first orientation for freely permitting relocation of said iron to desired positions over said linkage surface, and means associated with said linkage for preventing articulation when said iron is in said second orientation to maintain said iron out of contact with said ironing surface.

4,438,578
PICTURE FRAME AND CORNER BRACKET ASSEMBLY

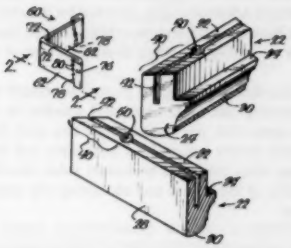
Malcolm Logan, Barrington, Ill., assignor to Logan Graphic Products, Inc., Wauconda, Ill.

Filed Apr. 21, 1983, Ser. No. 487,316
Int. Cl.³ G09F 1/12
U.S. Cl. 40—152 6 Claims

1. Components for constructing a picture frame, said components comprising:

a plurality of frame sections for being assembled into a picture frame in which two of said frame sections are adapted to be oriented at an angle to form a corner of the assembled frame at the adjacent ends of the two sections, each said frame section having an end portion at each end containing material that is deformable under the imposition of a localized force, each said frame section end portion defining a channel opening rearwardly when the frame section is assembled with the other frame sections to form the frame, said channel extending from the end of said frame section along said frame section end portion, each said frame section end portion further defining a cavity communicating with said channel and an adjacent deformable bearing surface comprising said deformable material; and

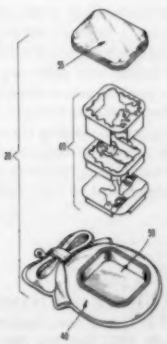
a bracket adapted to be disposed within the channels of said two frame sections when oriented to form a corner of the assembled frame, said bracket having two legs disposed at an angle substantially identical to the angle formed by said two frame sections at said frame corner, each said bracket leg having a first portion adapted to be received in one of said frame section channels, each said bracket leg having a second portion with an engaging member for being received in one of said frame section cavities, said engaging member defining an engaging wall to engage said frame section deformable bearing surface, said frame section bearing surface and said bracket engaging wall being oriented at angles relative to the length of the frame section whereby, when the bracket legs are aligned in registry with the channels of said two frame sections disposed to form the corner of the assembled frame, relative movement between the bracket and the frame sections can be effected to dispose the bracket within the channels and to cause the engaging wall of each bracket leg to deform the associated frame section bearing surface and force the two frame sections together at the corner.



4,438,579
THREE-DIMENSIONAL PICTURE WITH INTERCHANGEABLE SCENES

Robert W. Engel, 2745 Provincetowne Dr., Toledo, Ohio 43613

Filed May 2, 1983, Ser. No. 490,521
Int. Cl.³ G09F 1/12
U.S. Cl. 40—160 13 Claims



1. A kit for creating a three-dimensional picture comprising in combination

a frame with inner sides which, together with a backplate, make an interior angle, said inner sides circumscribing a window which establishes a length and a breadth of a display;

a plurality of substantially planar scenes, each scene having

a central adornable area shaped to fit within said window and at least two bendably resilient hinges extending between zero and the depth of the display beyond opposing straight edges of said adornable area and adapted to bend backward along said edges and mate with corresponding inner sides; said plurality including

(a) a remote scene with the shallowest hinges, the smallest adornable area, and sized to stack behind all other scenes,

(b) a nearest scene with the deepest hinges, the largest adornable area, adapted for cut out, and sized to stack in front of all other scenes,

(c) any other scene having hinges of intermediate depth and intermediate adornable area, adapted for cut out, and sized to stack between said remote scene and said nearest scene in order according to hinge depth and size of adornable area;

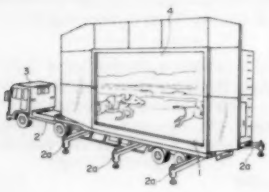
whereby the three-dimensional picture is created by removably inserting said scenes into said window in order, the remote scene first, the nearest scene last, with hinges bent backward, butted against said backplate, and frictionally engaging other hinges or said inner sides, thereby setting the depths of the scenes and anchoring the scenes in said window.

4,438,580

STACKING TYPE MOVABLE LARGE DISPLAY DEVICE

Masamura Yamaji; Shozo Fujita; Shunichi Futatsuishi, and Takashi Takushima, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,587
Claims priority, application Japan, Jul. 20, 1981, 56-114143
Int. Cl.³ G09F *21/04*
U.S. Cl. 40—590 **5 Claims**



1. A display device, comprising: a plurality of movable display blocks each having a display area segment with said plurality of display blocks being stackable one onto another such that together, said display area segments of said plurality of display blocks form a predetermined display area surface, a lowermost one of said display blocks being secured to a trailer having supporting outriggers, remaining ones of said display blocks being detachably secured to respective trailers, means for detachably securing said display blocks to each other when said display blocks are assembled to form said predetermined display area surface.

4,438,581

BENCH REST DEVICE FOR HANDGUNS

Bernard A. LaValle, 627 E. Queen Ave., Spokane, Wash. 99207

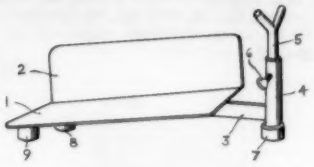
Filed May 20, 1982, Ser. No. 380,413
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **1 Claim**

1. A bench rest device for handguns comprising:

(a) a rigid, rectangular, inclined surface base having top and bottom surfaces and front and rear ends;

(b) a vertical surface affixed along the side edge of said inclined surface;

(c) a sleeve securely affixed to the center of the raised end of said inclined surface;



(d) a sliding yoked shaft within said sleeve, secured by means of a set screw; and

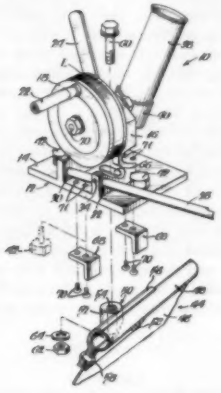
(e) tripodal feet portions for stability upon a surface.

4,438,582

DOWNRIGGER SYSTEM MOUNTING ARRANGEMENT

Michael G. Lummis, Portage, Mich., assignor to Pacific Atlantic Products, Ltd., Kalamazoo, Mich.

Filed Jan. 29, 1982, Ser. No. 344,212
Int. Cl.³ A01K *89/00*
U.S. Cl. 43—27.4 **8 Claims**



1. A downrigger system for trolling adapted to be mounted on a boat, comprising:

a frame assembly having a base portion,

a reel rotatably mounted on said frame assembly for dispensing a downrigger line,

first mounting means on the base portion adapted to cooperate with said frame assembly for use in releasably attaching said system to a mounting plate affixed to said boat, and

second mounting means on the same base portion adapted to cooperate with said frame assembly for use in releasably attaching said system to an oarlock affixed to said boat,

said second mounting means comprising fastener means adapted to extend through the base portion of said frame assembly and said oarlock for attaching the downrigger system to said boat,

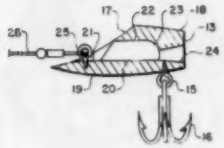
said frame assembly defining an elongated opening through which said fastener means extends for accommodating adjustable mounting of said downrigger system.

4,438,583

FISHING LURE

Raymond B. Sullivan, 443 Kendry, Bloomfield Hills, Mich. 48013

Filed Jun. 28, 1982, Ser. No. 392,925
Int. Cl.³ A01K 85/00
U.S. Cl. 43—42.06 9 Claims



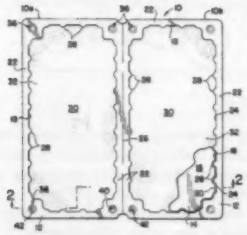
1. A fishing lure for casting and trolling comprising:
(a) a body with longitudinal flow passage within the interior of the body, said flow passage having adjoining ingress and center portions, the axes of said portions aligned with the longitudinal axis of the body, and an egress portion adjoining the center portion, the axis of the egress portion offset from and oblique to the axis of the center portion, and a baffle at the junction of the center and egress portions;
(b) a means for attaching a fishing line to the body;
(c) at least one hook attached to the body; and
(d) a means for attaching the hook to the body.

4,438,584

TRAP FOR RATS, MICE, AND OTHER VERMIN

Stanley Z. Baker, Mayfield Heights, and Benjamin H. Baker, Chesterland, both of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio

Continuation of Ser. No. 53,381, Jun. 29, 1979, abandoned. This application Jan. 11, 1982, Ser. No. 338,621
Int. Cl.³ A01M 23/00
U.S. Cl. 43—58 4 Claims



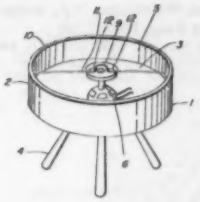
1. A trap for vermin comprised of a generally flat support formed of a non-porous, thin sheet material, said support having at least one positioning surface, at least one indented portion having a given depth below said positioning surface, and a relatively thick layer of pressure sensitive adhesive material contained within said indented portion having a thickness of at least 1/16 inch, a plastic flow temperature above 120° F. and an upper surface; said indented portion having a greater depth than the thickness of said layer of adhesive and said positioning surface being spaced above said adhesive layer upper surface.

4,438,585

INSECT EXTERMINATING DEVICE

B. Dale Slatton, Sheridan, Ill., assignor to Ernest Kettelson, Joliet, Ill., a part interest

Continuation-in-part of Ser. No. 242,751, Mar. 11, 1981, abandoned, which is a continuation of Ser. No. 89,842, Oct. 10, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 339,942
Int. Cl.³ A01M 01/04, 01/06
U.S. Cl. 43—113 7 Claims



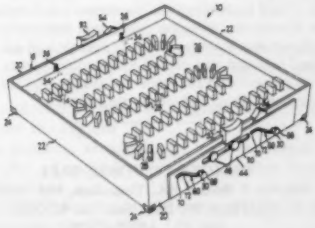
1. An insect exterminating device, comprising support means, a length of flexible material supported by said support means for rotation in a first annular zone of rotation, intermittent rotary drive means to rotate said length of flexible material in said first annular zone of rotation for a pre-determined period of time, then stop rotation for a predetermined period of time, and then re-start rotation for a pre-determined period of time, wherein said intermittent rotary drive means includes an electric motor, thermal means operatively associated with said motor to provide a temperature rise of a pre-determined amount after a pre-determined period of time of operation of said motor, and stitch means operatively associated with said thermal means to sequentially disconnect said motor from its power source when said pre-determined temperature rise is reached and reconnect said motor to its power source when said temperature has lowered to a pre-determined pre-existing level.

4,438,586

GAME DEVICE WITH TEMPLATE FOR ARRANGING OBJECTS

John R. Wildman, North Riverside, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 25, 1982, Ser. No. 342,360
Int. Cl.³ A63F 7/00
U.S. Cl. 46—1 R 11 Claims



1. A game device for arranging objects in a predetermined configuration, comprising:
a plurality of objects;
a frame,
a template removably mounted in said frame, said template including a plurality of openings that receive said objects,

said openings arranged in said predetermined configuration; and

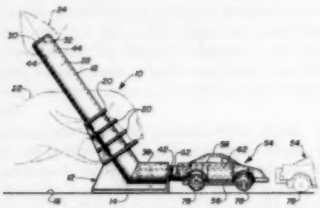
means for moving said template from a first position supporting said objects to a second position spaced from said objects including a finger engaging member and a grasping member, said moving means being actuated by squeezing said finger engaging member and grasping member together.

4,438,587

BLOWGUN TOY CAR LAUNCHER

Joseph A. Marino, Whitehouse, N.J., assignor to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Nov. 26, 1982, Ser. No. 444,677
Int. Cl.³ A63H *29/16*
U.S. Cl. 46—44 **6 Claims**



1. A blowgun toy car launcher and car comprising in combination,

a. a base having a bottom surface arranged to be disposed and manually held preferably upon a horizontal supporting surface,

b. a mouthpiece tube extending from said base at an upwardly and rearwardly extending angle and having an outer end adapted to be engaged by the mouth of a person so as to blow air into said tube and launch said toy car,

c. a launching tube extending forwardly from said base and lower end of said mouthpiece tube and having an outer end directed away from said mouthpiece tube and in an opposite direction from said tube,

d. air-conducting means within said base extending between and communicating with the ends of said tubes which are connected to said base to establish a through passage between said outer ends of said mouthpiece tube and launching tube,

e. a toy car having front and rear ends and freely rotatable wheels thereon, and

f. a longitudinal cavity in said car closed at the forward end thereof and opening to the rear end thereof and generally complementary in shape to at least the outer end of said launching tube and adapted to slidably coengage the exterior of said launching tube for support thereby and projection therefrom, whereby when said mouthpiece tube has air blown into it under pressure said air will act against the closed forward end of said longitudinal cavity in said toy car to project said car from said launching tube for rolling movement along said supporting surface.

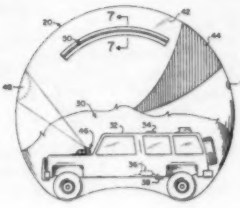
4,438,588

REMOTE CONTROL BALL

John E. Martin, 5 Belfast Rd., Timonium, Md. 21093

Filed Sep. 29, 1982, Ser. No. 427,890
Int. Cl.³ A63H *17/28*
U.S. Cl. 46—228 **6 Claims**

1. In a system of hollow ball and vehicle with wheels, steering and a power circuit for same, and means for remotely controlling steering and forward-reverse direction of the vehicle, the improvement comprising: means for increasing wheel traction on the ball inner surface comprising: said ball being inflatable and of soft flexible material which when the ball is partially inflated can wrap partially around said wheels for increasing traction area, means for indicating forward orientation of said vehicle for purposes of said remote control, including said ball being at least in part light-conductive, means for illuminating said light conductive part of said ball when said



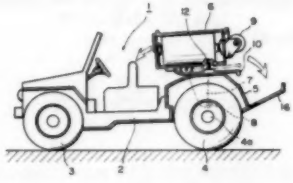
light conductive part is at a particular location generally ahead of said vehicle, said means for illuminating comprising a light on a forward part of said vehicle, and said means for indicating also indicating rotation of said ball and comprising means for modulating said illuminating when the ball is rotating.

4,438,589

MOVING TOY WITH MOVABLE BATTERY RECEPTACLE

Yukimitsu Matsushiro, Tokyo, Japan, assignor to Kabushiki Kaisha Matsushiro, Tokyo, Japan

Filed May 18, 1982, Ser. No. 379,499
Claims priority, application Japan, Mar. 9, 1982, 57-33100[U]
Int. Cl.³ A63H *17/00*
U.S. Cl. 46—251 **6 Claims**



1. A moving toy having a body, a battery receptacle, and movable means for shifting the center of gravity of the toy by shifting the position of the battery receptacle relative to the body, comprising:

a stop lever which allows the battery receptacle to pivot and be supported at any angle of inclination,

a downward projecting stopper which is provided on an intermediate portion of the stop lever,

a spring positioned between the battery receptacle and the stop lever for the purpose of urging the stop lever into contact with a rear portion of the body,

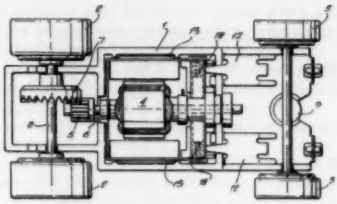
a groove provided within the fixed range of movement of the stopper, located on a surface of a rear portion of the body, and

a front groove in a front part of the rear portion of the body and rear groove in a rear part thereof, each being slightly deeper than the first-mentioned groove.

4,438,590
ELECTRIC MOTOR TOY CAR

Cheuk-Ming Lee, Hong Kong, Hong Kong, assignor to The Refined Industry Company, Limited, Kowloon, Hong Kong

Filed Sep. 22, 1982, Ser. No. 421,550
Claims priority, application United Kingdom, Nov. 11, 1981, 8133986
Int. Cl.³ A63H 17/00
U.S. Cl. 46—257 2 Claims



1. A toy car for use with a slotted or slotless track; said toy car comprising:

a chassis,

a motor for driving a set of wheels,

a terminal strip for picking up current from a wire in said track,

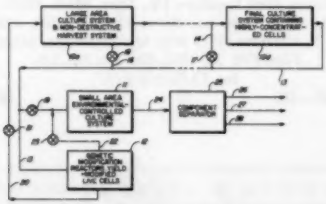
a wiper mounted to contact said terminal strip and to contact said motor so that current passes from said track wire via said terminal strip and said wiper to said motor,

said wiper comprising a thin metal plate, one end of said wiper is bent at an angle of approximately 90° to the body of said plate, said bent end portion defining a cut-out portion to receive one end of said terminal strip and a tail projecting from the angle for contacting an electric brush of said motor and a lug bent at approximately 90° to the body of said plate on the other end of said plate to engage a projection on said chassis, so that said wiper is held in position on said chassis.

4,438,591
ALGAL CELL GROWTH, MODIFICATION AND HARVESTING

John O. Kessler, Tucson, Ariz., assignor to The University of Arizona Foundation, Tucson, Ariz.

Continuation-in-part of Ser. No. 118,585, Feb. 4, 1980, Pat. No. 4,324,067. This application Feb. 10, 1982, Ser. No. 347,550
The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.
Int. Cl.³ A01G 7/00
U.S. Cl. 47—1.4 28 Claims

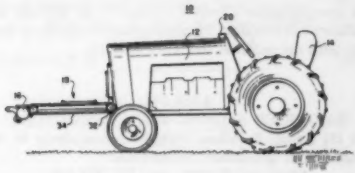


1. A system for growing, enhancing the growth of and harvesting algal cells which multiply by cell division, comprising at least one relatively large area cell growth liquid containing reservoir in which said cells are initially disposed for multiplication by cell division, said reservoir being exposed to prevailing outdoor environmental conditions and being provided with a concentrated cell harvest zone adjacent the top surface of the liquid contained therein, cell migration means for effecting self-locomoted migration of the cells in said reservoir to said harvest zone, a relatively small area cell growth liquid containing reservoir, transfer means for transferring concentrated cells from said harvest zone to said small area cell growth liquid containing reservoir, and environmental control means for controlling the environmental conditions to which the cells in said small area liquid containing reservoir are exposed.

4,438,592
WICK BAR LIFT

Kenneth J. Myers, 1017 Elk St., Beatrice, Nebr. 68310

Filed May 14, 1982, Ser. No. 378,184
Int. Cl.³ A01C 15/00
U.S. Cl. 47—1.5 3 Claims



1. Apparatus comprising:

a vehicle;

lift arm means having first and second ends separated from each other by a lift arm length;

mounting bracket means for pivotally mounting the first end of said lift arm means to the vehicle for pivotal motion in a vertical plane about a first horizontal pivot axis;

hydraulic cylinder means mounted at one of its ends to said mounting bracket means at a first location at a first distance from said first horizontal pivot axis and mounted at its second end to said lift arm at a second distance from the first horizontal pivotal axis for pivoting said lift arm in said vertical plane about said first pivotal axis to selectively raise and lower the second end of said lift arm in relation to the extension and retraction of the arm of said hydraulic cylinder means;

means for mounting said hydraulic cylinder means for pivotal motion in a vertical plane in relation to the pivotal motion in the vertical plane of said lift arm means;

the ratio of said second distance to said length of said lift arm and said predetermined extensional retraction of said arm of said hydraulic cylinder means being sufficient to move the second end of said lift arm only within a range of no more than 60 inches above the ground;

wick bar means for containing a liquid;

said wick bar means including a horizontally elongated wick application surface for wetting a horizontally elongated surface with liquid;

said surface having a vertical arc length from its center of no more than 180 degrees;

means for pivotally mounting said wick bar means to the second end of said lift arm about a second horizontal pivotal axis;

a first sprocket wheel having its center of rotation aligned with said first pivotal axis;

a second sprocket wheel mounted to said lift arm means;

flexible means connecting said first and second sprocket wheels for causing said second sprocket wheel to rotate when said first sprocket wheel rotates; and

means connecting said second sprocket wheel and said wick bar means for causing said wick bar means to be pivoted about said second horizontal pivotal axis.

4,438,593

ANTI-FUNGAL PERFORMANCE IN PELLETED SEEDS THROUGH USE OF HYDROPHOBES

George L. McNew, Hastings on the Hudson, N.Y., and Norman W. Thomas, Warren, N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 782,645, Mar. 30, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,735

Int. Cl.³ A01C *1/06;* A01N *43/36, 47/28, 61/00*

U.S. Cl. 47—57.6 22 Claims

1. A seed possessing a continuous, adherent coating composition thereon comprising:

(a) an anti-fungal agent specifically effective against soil-borne phytopathogenic fungi in an amount of from about 0.1 to 5% by weight based on the weight of the coating composition;

(b) a particulate non-phytotoxic hydrophobe present in an amount of about 0.5 to about 30% by weight based on the weight of the coating composition; and

(c) a non-phytotoxic binder present in an amount at least sufficient to maintain the mechanical integrity of the coating until the pelleted seeds are planted.

4,438,594

BALANCED SLIDING DOOR STRUCTURE

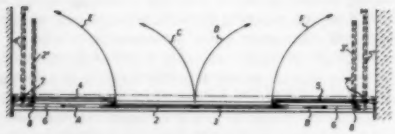
Helmut H. Bunzl, Zumikon, Switzerland, assignor to AG für Türautomaten, Dübendorf, Switzerland

Filed Jan. 7, 1982, Ser. No. 337,588

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101725

Int. Cl.³ E05D *15/22*

U.S. Cl. 49—177 12 Claims



1. Balanced sliding door structure having

an upper support rail (19),

a lower guide track (6, 46),

at least one sliding door (2, 3) suspended from the support rail and having a lower guide element (30) engaging lower guide track,

the door including a door frame (10, 11) and a swing door panel (2a) hinged to the frame and movable about a vertical swing axis,

wherein,

the door frame includes a horizontal frame element (10) suspended from the support rail, and a vertical frame element (11) secured thereto and carrying said lower guide element (30);

a hinge means (8) secured to the vertical frame element and to the door element to permit relative swinging movement of the door element with respect to the frame and thus permit relative sliding of the entire door along the rail as well as swinging of the door element;

and means are provided for prestressing the vertical frame element (11) with respect to the horizontal frame element (10) to balance the weight of the door element when supported only by the hinge means (8), comprising

a metal angle (12) having a corner (23') positioned in the vicinity of the hinge means (8) secured to both said frame elements (10, 11) and applying a force component thereon which is counter the weight of the door element as applied to the vertical frame element by the hinge means, said angle (12) being fitted in the horizontal frame element (10) and secured to the frame by a fulcrum or pivot bolt (14) positioned adjacent the corner region (23) of the angle.

4,438,595

PLUG DOOR ASSEMBLY

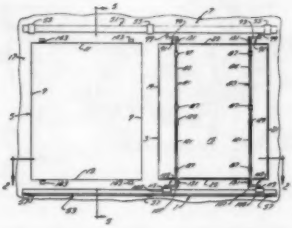
John A. MacDonald, Beaconsfield, Canada, assignor to Railtech Ltd., Canada

Continuation-in-part of Ser. No. 156,631, Jun. 5, 1980. This application May 31, 1983, Ser. No. 498,037

Claims priority, application Canada, Apr. 2, 1980, 349,055

Int. Cl.³ E05D *15/10*

U.S. Cl. 49—219 4 Claims



1. A door assembly comprising a door for closing an opening in a wall, first rail means mounted on the wall over the opening for use in longitudinally moving the door between an open position alongside the opening and adjacent the wall and an intermediate position opposite the opening; mounting means movably mounting the door on the first rail means; the mounting means including at least a pair of vertical crankshafts rotatably mounted on the outer face of the door, the crankshafts extending past the upper and lower ends of the door; a low friction elongated carriage member slidably mounted on the rail means over the opening, the [crankshaft]crankshafts being pivotally mounted in spaced journals provided in the carriage, one of the journals being in the form of an elongated slot such that the crankshaft received by the slot can travel along the longitudinal axis of the elongated carriage relative to the other crankshaft or shafts; second rail means provided under the opening on the wall; and guide means on the lower ends of the crankshafts cooperating with said second rail means under the opening for guiding the door; said mounting means including means for laterally moving the door between the intermediate position opposite the opening and a closed position within the opening and a closed position within the opening in the plane of the wall; and locking means on the mounting means for cooperating with locking means on the wall to lock the door within the opening.

4,438,596

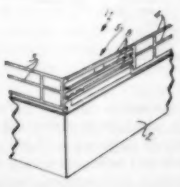
REMOVABLE BARRIER ASSEMBLY

Johnnie Jones, 4066 Ranchero Dr., Dorr, Mich. 49323; Joseph A. Einig, 2215 108th St., Byron Center, Mich. 49315, and Arthur T. Ackerson, 3879 40th St., Grandville, Mich. 49418

Filed Feb. 22, 1982, Ser. No. 351,318

Int. Cl.³ E06B *3/32*

U.S. Cl. 49—463 16 Claims



1. A removable safety barrier, comprising:

a barrier rail means for preventing passage through a given area bounded by a first and second support means, said rail means being elongated and having a first and second end;

a retaining means for releasably supporting said first end of said barrier rail means and limiting the movement thereof;

a latching means for removably supporting said second end of said barrier rail means, said latching means having a releasing means allowing said second end of said barrier rail means normally to be restrained by said latching means, said latching means also including release means for releasing said barrier rail means when said release means is activated, and said latching means also having a stationary support element;

said barrier means normally being positioned and supported by said stationary support element and not in contact with or supported by said releasing means;

said stationary support element comprises a back wall, a bottom wall and a lip;

said back wall and said lip extending upward from said bottom wall to define a U-shaped support area;

said releasing element comprises a top wall extending outward from said back wall and a gate pivotally connected to said top wall;

said lip extending upward from said bottom wall a distance less than said back wall extends from said bottom wall, thereby defining a gap between said lip and said top wall;

said gate spanning said gap between said lip and said top wall so that said gate abuts said lip when said gate is in a closed position;

said gate pivotally opening only inwardly of said release element;

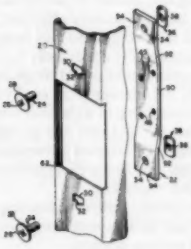
such that said barrier means may be passed through said gap between said lip and said top wall, supported in said support area and then confined within said safety latch by said gate, whereby said retaining means and said latching means will support said barrier rail means when subjected to a force from any direction.

4,438,597

ADJUSTABLE HINGE MOUNT

Michael J. Maggart, Cherry Hill, N.J., assignor to Eljo Products, Inc., Pennsauken, N.J.

Filed Nov. 27, 1981, Ser. No. 325,210
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—501 **9 Claims**



1. An adjustable hinge mount for hingeably connected bodies such as a door and doorframe, the door to be rotatably attached to the frame by a hinge having hinge leaves, at least one leaf to be rigidly attached to a mounting bracket and the bracket to be adjustably attached to the body of at least one of the door and doorframe, the mount comprising:

a body defining an enclosed area;

a mounting bracket positionable against the body within the enclosed area, the mounting bracket having means for rigidly attaching the hinge leaf thereto, the enclosed area having a cavity encompassing the mounting bracket as well as clearance for a span of vertical and horizontal movement of the mounting bracket; and,

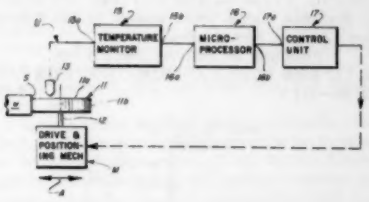
a plurality of mounting bolts for adjustably attaching the mounting bracket to the body, the bolts extending through the mounting bracket and through the body via adjustment holes in said body, the adjustment holes having a periphery larger than the bolts to allow a span of vertical and horizontal movement, notches in the periphery of the adjustment holes dimensioned to rest against the bolts, indicating a known alignment of the mounting bracket with respect to the body, the bolts operable to rigidly attach the mounting bracket to the body at the known alignment and at alignments within the span of vertical and horizontal movement.

4,438,598

SURFACE TEMPERATURE CONTROL APPARATUS

Clinton J. Wohlmuth, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Nov. 30, 1981, Ser. No. 325,975
Int. Cl.³ B24B *49/14*
U.S. Cl. 51—165.73 **8 Claims**



1. An apparatus for controlling the temperature of a rotating first surface when in frictional engagement with a second surface, said apparatus comprising a rotating member provided with the first surface; a thermal sensing element mounted on said member and rotatable therewith as a unit, said sensing element having a first section exposed on the member first surface and being adapted to engage the second surface, and a second section exposed on the exterior of said member remote from the exposed first section, said second section defining a predetermined circular path during rotation of said member; first means for effecting rotation of said first member while the first and second surfaces are in frictional engagement; second means for effecting adjustment of the first and second surfaces from a frictional engagement; and a temperature detecting means having a fixedly mounted segment disposed in predetermined proximity to the circular path of said second section, said detecting means being operatively connected to said second means whereby adjustment of at least one of the frictionally engaged surfaces relative to the other is responsive to the temperature detected by the detecting means segment from the exposed second section of the thermal sensing element.

4,438,599

VIBRATION DAMPER FOR MACHINE-CARRIED WORKPIECE

Joseph T. Kamman, and Mark D. Kohring, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 28, 1981, Ser. No. 334,964
Int. Cl.³ B24B *41/06*
U.S. Cl. 51—238 S **2 Claims**

1. A vibration damper for machine-carried workpieces, comprising:

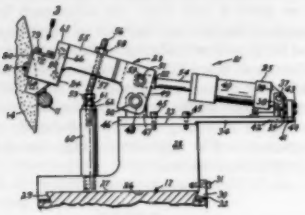
(a) a work contact shoe;

(b) a shoe holder;

(c) a pair of elastomeric elements oppositely disposed be-

tween said shoe and said holder, wherein said elements are preloaded in opposition to each other;

(d) means for mounting said shoe holder to a machine base; and



(e) means for preloading said shoe against a workpiece in a direction transverse to the preload direction of said opposed elastomeric elements.

4,438,600

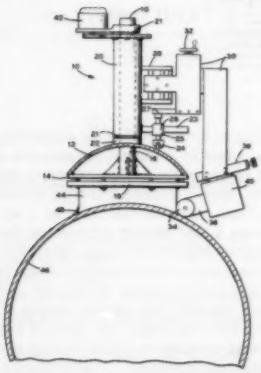
GRINDING, WELDING AND CUTTING APPARATUS

Paul J. Berbakov, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 14, 1981, Ser. No. 301,788

Int. Cl.³ B24B *17/00, 21/16;* **B23Q** *35/00;* **B23K** *7/10*

U.S. Cl. 51—241 S **5 Claims**



1. An apparatus for controlling movement of a metal working tool along a seam interconnecting a nozzle section and a shell section comprising:

a mounting plate removably mountable on the end of a nozzle section away from the joinder of a nozzle and a shell for holding the apparatus parallel to the axis of the nozzle;

a shaft fixedly attached to said mounting plate near the center of said mounting plate and perpendicular thereto;

a cam having a generally saddle-shaped upper cam surface shaped such that said upper cam surface reproduces the seam interconnecting a nozzle section and a shell section, and such that seams formed by different nozzle and shell intersections are reproduced by said cam surface along corresponding paths of said cam surface located at different distances from the center of said cam;

a rotatable sleeve concentrically disposed about said shaft having a length substantially the same as that of said shaft, for transmitting axial rotation to the metalworking tool;

a horizontal arm fixedly attached to said sleeve;

a cam fo11ower assembly attached to and depending from said horizontal arm and contacting said cam, said cam follower being adjustable along the length of said horizontal arm;

a floating assembly fixedly attached to said sleeve above said cam follower to reproduce the up and down motion induced in said sleeve when said cam follower assembly rotates along said cam;

a positioning assembly fixedly attached to said floating assembly, said positioning assembly including a positioning crank for making vertical adjustments of said positioning assembly and a radial positioning device for making radial adjustment of said positioning device, said adjustments permitting adjustments of said positioning assembly so that the apparatus can accommodate workpieces having different diameters;

means for working along the seam attached to the lower end of said positioning assembly; including power means for operating said work means; and

means for rotating said sleeve and attached elements axially about the shaft, attached to said sleeve for rotation therewith.

4,438,601

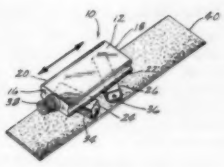
SANDPAPER CLEANING DEVICE

Alvin O. Olson, 546-9th St., SE., Mason City, Iowa 50401

Continuation of Ser. No. 251,353, Apr. 6, 1981, abandoned. This application Mar. 9, 1983, Ser. No. 473,679

Int. Cl.³ B24B *55/00*

U.S. Cl. 51—262 A **2 Claims**



1. A cleaning tool for cleaning sandpaper, comprising,

an elongated horizontally disposed handle having a horizontal longitudinal axis, opposite parallel side portions, and a horizontally disposed bottom portion,

first and second longitudinally spacd apart brackets secured to and spanning said handle adjacent said bottom portion, said brackets being angularly disposed with respect to each other and with respect to said longitudinal axis, and

a horizontally disposed cylindrically shaped roller wire brush being parallel to said bottom portion and having a freely rotatable axle mounted on each of said brackets,

each of said brackets being of a channel construction including spaced apart parallel ears and an integral connecting web, said parallel ears adapted to receive said roller brush axle, said parallel ears being perpendicular to the longitudinal axis of said brush axle,

said brackets and said rollers extending beyond the side portions of said handle, and comprising the only structure on said bottom portion.

4,438,602

LENS CARRIER ASSEMBLY FOR AUTOMATIC LENS BLOCKING

Charles S. Lannom, Box 270, Grinnell, Iowa 50112

Filed Jun. 25, 1981, Ser. No. 277,159

Int. Cl.³ E05F *11/00*

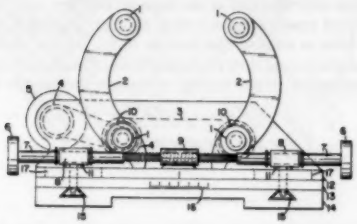
U.S. Cl. 51—277 **3 Claims**

1. A carrier assembly for positioning a finished uncut lens for blocking, said assembly being adapted for securement to the vertically movable portion of a vertexometer and comprising:

(a) a base having a top portion, a bottom portion and means

for removably attaching said base to the vertically movable portion of a vertexometer, said base portions being constructed and arranged for movement fore and aft with respect to the vertexometer;

(b) means on said base for holding a lens in a position above said base top portion, said lens holding means including a pair of spaced-apart, arcuate-shaped arms, each of said arms extending upwardly from said base top portion and being biased towards the other arm, and means for allowing rotative movement of a lens held between said arms,



said means for allowing rotative movement of the lens including a plurality of rollers mounted on said arms, said plurality of rollers being constructed and arranged to rotate simultaneously with a lens held therebetween; and

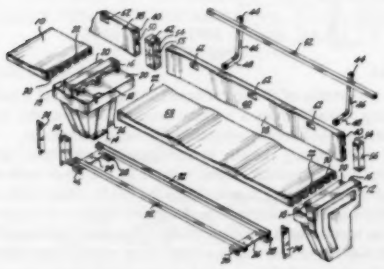
(c) means on said base for decentering the lens a predetermined value in accordance with an optical prescription, said means including means for moving said base top portion laterally with respect to said base bottom portion, thereby causing a simultaneous lateral decentering of the lens.

4,438,603

STADIUM SEATING

Martin J. Durkan, Jr., 17705 153rd Ave. SE., Renton, Wash. 98055

Filed Jun. 24, 1982, Ser. No. 391,553
Int. Cl.³ E04H 3/12
U.S. Cl. 52—8 **18 Claims**



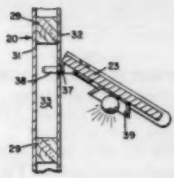
1. In combination with a gradine comprising a generally vertical surface abutting a generally horizontal surface, a modular seating assembly comprising; a plurality of integrally formed plastic pedestals attached in spaced array along said gradine, and an integrally formed plastic seat section extending between adjacent pedestals, said seat section interfitting in respectively congruent recesses in the upper portions of said pedestals, and each pedestal being attached to said gradine by bracket means affixed both to the sides of said pedestals and to the generally vertical surface of said gradine, rearwardly of said pedestal.

4,438,604

INTERIOR DECORATION SYSTEM

Lawrence E. McGourty, Jr.; Gabriel Audette, and Jean M. Audette, all of c/o Woodcraft Industries, Ltd., 7 High St., Hudson, Mass. 01749

Filed Jun. 19, 1981, Ser. No. 275,252
Int. Cl.³ A47B 5/00
U.S. Cl. 52—28 **9 Claims**



1. Interior decoration system, comprising:

(a) a panel located adjacent a structural wall,

(b) a plurality of vertically-spaced first brackets mounted on the structural wall,

(c) a plurality of vertically-spaced second brackets mounted on the rear surface of the panel and locking with the first brackets to hold the panel in fixed relationship to the structural wall, a plurality of shelves being mounted on the front surface of the panel, each shelf having a plurality of male elements that removably lock into female elements, and

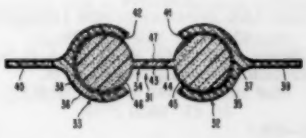
(d) a lighting fixture mounted on the undersurface of each shelf, an electrical outlet being located at the front surface of the panel for connection to the lighting fixture, the lighting fixture including an electrical connector having prongs mounted on the undersurface of the shelf, the male members and the electrical connector being mounted adjacent one edge of the shelf, the male members and the prongs of the electrical connector extending at an acute angle to the undersurface of the shelf.

4,438,605

CONTINUOUS, MOVEABLE THERMAL BARRIER SYSTEM

Paul V. DeLucia, Rte. 82, R.D. 6, Box 85, Hopewell Junction, N.Y. 12533

Filed Oct. 19, 1981, Ser. No. 312,713
Int. Cl.³ E04B 1/344; A47G 5/00
U.S. Cl. 52—71 **10 Claims**



1. A hinge assembly for use in a continuous moveable, paneled, thermal barrier system, enabling the panels of the system to be moved from in-use position to out-of-the-way storage or open position, said assembly being constructed in such manner as to maintain high thermal insulating efficiency thereby greatly increasing the overall thermal insulating efficiency of the system, said assembly and, further, which permits pivotal motion about two parallel axes, comprising:

a pair of separate, spaced apart elongated hinge members of thermal insulating material, each of whose configuation is that of a hollow shell thereby creating an air space which serves to increase thermal insulating efficiency, said shell including at least a generally open socket, the angle of the opening being less than 180°; and,

an elongated hinge member of thermal insulating material whose configuration is that of a hollow shell thereby creating an air space which serves to increase thermal insulating efficiency, said shell including at least a pair of opposed interconnecting inserts;

said inserts adapted to be pressure sealed within a respective one of said sockets while being capable of relative angular movement therein, thereby providing a continuity of thermal insulating performance at the interconnection of adjacent panels of the system while permitting relative pivotal motion therebetween and about two parallel axes.

4,438,606

SHELTER FOR PROTECTING LARGE-SIZE OBJECTS

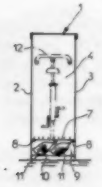
Andre-Marie Chardon, Aux amphores, Courcelles, 89570 Neuvy-Sautour, and Philippe Guibert, 2 Place des Magnolias, 77680 Roissy en Brie, both of France

Filed Jul. 31, 1981, Ser. No. 289,054

Claims priority, application European Pat. Off., Apr. 1, 1981, NR 81400523.7

Int. Cl.³ E04L *1/12*

U.S. Cl. 52—79.1 **11 Claims**



1. A shelter for protecting large size objects, comprising:

a structure having a shape adapted to the shape of the objects it is to contain and formed of two spaced vertical, longitudinal walls, and a rear wall connecting said vertical, longitudinal walls;

a cover fitting over said walls;

a front face, a door pivoted on said face for closing said shelter;

a flat flooring defining with said walls a lower compartment, said flooring being constituted by a removable sheet metal; and

in said compartment, a heavy mass whose weight bears onto the walls of the shelter in order considerably to increase the total weight of the shelter and prevent easy handling thereof.

4,438,607

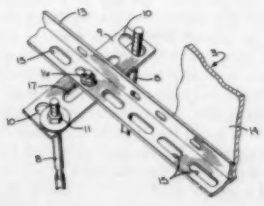
METHOD AND APPARATUS FOR LEVELING A STORAGE STRUCTURE

Delmer R. Nelson, Cordova, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Mar. 29, 1982, Ser. No. 362,919

Int. Cl.³ E02D *27/00*

U.S. Cl. 52—126.1 **5 Claims**



1. In a storage structure, a foundation, a plurality of pairs of anchor elements embedded in the foundation in circumferentially spaced relation, the upper ends of said anchor elements projecting above said foundation, a support member connected to the upper ends of each pair of anchor members, means for adjusting the height of each of the support members with respect to the corresponding anchor elements to thereby enable the support member to be leveled, a plurality of generally curved wall sections mounted on the support members and arranged in circular configuration, each section having a generally horizontal member supported on said support members, one of said members having a plurality of first elongated slots and the other of said members having a plurality of second elongated slots disposed at an angle to said first slots, and a plurality of connectors extending through aligned first and second slots to connect the sections to the support members, said first and second slots permitting both radial and circumferential adjustment of said sections relative to said support members.

4,438,608

STAIRTREAD FOR SPIRAL STAIRCASE

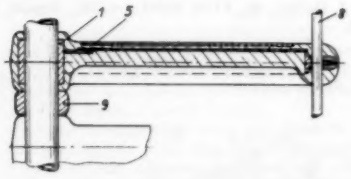
Wilfried Hamm, Im Wiesengrund 28, 4330 Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,911

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 8005300[U]

Int. Cl.³ E04F *11/02, 11/08*

U.S. Cl. 52—187 **3 Claims**



1. In a staircase of the spiral type having individual treads projecting radially from a vertical support column, the improvement to such treads wherein each tread comprises:

(a) a frame having radially extending sides with inner and outer ends, a tubular sleeve welded to the inner ends of said sides, an outer segment welded to the outer ends of said frame sides, said sides and segment being of T-shaped cross section with the stem of the T oriented horizontally and welded to said sleeve at said inner ends of said sides,

(b) a formed steel plate welded to upper marginal edges of said T-shaped sides and having downwardly bent marginal side portions welded to margianl edges of said stems of said T-shaped frame sides, said plate being perforated,

(c) a polyurethane foam covering means encasing said frame sides and said steel plate to define thickened and rounded marginal portions along said radially extending frame sides, said polyurethane foam means defining downwardly open radially extending slots adjacent said edges, and

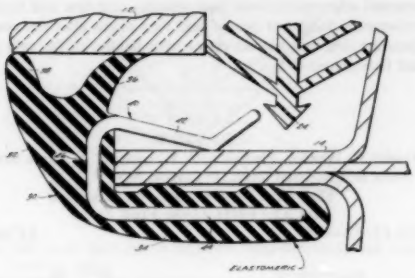
(d) carpeting provided on the upwardly facing surface of said polyurethane covering and marginal edges of said carpeting received in said slots, said polyurethane covering means being recessed to receive said carpeting.

4,438,609

URETHANE BONDED WINDSHIELD DAM

Erik I. Nielson, Oakville, and Robert B. Hope, Downsview, both of Canada, assignors to Schlegel Corporation, Rochester, N.Y.

Filed Jan. 30, 1981, Ser. No. 229,848
Int. Cl.³ E06B 3/62, 7/16
U.S. Cl. 52—208 12 Claims



1. A method of installing windows in vehicles provided with body cavities for receiving windows and flanges therein for supporting such windows consisting of the step of

placing an elongated trim provided with a pair of window engaging ribs onto the flange located within the body cavity in which the window is to be sealed so that the window engaging ribs face outwardly away from the body cavity,

placing a bead of adhesive material about the periphery of the window,

positioning the window within the body cavity,

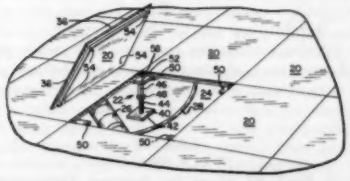
and pressing the window into contact with one of the two ribs while deflecting the other rib thereby forming said other rib into an internal dam for controlling the flow of the adhesive as the window is pressed into place thereby substantially preventing adhesive from flowing outwardly from the body cavity along the interior surface of the window and selaing between the outer peripheral edge of the window and the body cavity.

4,438,610

CLAMPED ACCESS FLOOR PANEL ASSEMBLY

James T. Fifer, #1001 1200 Boylston Ave., Seattle, Wash. 98101

Filed Apr. 14, 1982, Ser. No. 368,371
Int. Cl.³ E04B 5/43
U.S. Cl. 52—263 14 Claims



1. A corner clamped access floor panel assembly for mounting an access floor at a spaced distance above a base floor, the assembly comprising in combination:

(a) a plurality of panel supporting pedestals positioned at spaced intervals on the base floor and extending upwardly to substantially a common height, each pedestal including a panel-supporting surface adjacent its upper end;

(b) a plurality of polygonal panels arranged side by side in rows, each panel being supported at each corner by the panel supporting surface of one of the pedestals, each panel having a top surface and a clamp surface spaced below the top surface and overlying the support plate,

(c) rotatable clamping means releasably interengaging the support plate and clamp surface for releasably locking the panels on the pedestal,

(d) a rotary drive tool connector on the clamping means facing the top surface of the panel, and

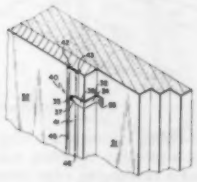
(e) a drive tool access hole through the top surface in substantially vertical alignment with the connector for rotating the clamping means between an operative position locking the panels on the pedestal and a release position unlocking the panels from the pedestal.

4,438,611

STUD FASTENERS AND WALL STRUCTURES EMPLOYING SAME

George E. Bryant, Renton, Wash., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 31, 1982, Ser. No. 364,079
Int. Cl.³ E04B 2/30, 2/40
U.S. Cl. 52—309.2 24 Claims



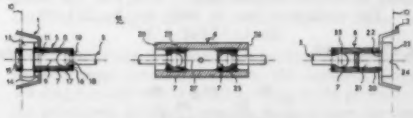
1. A fastener comprising a substantially flat elongated strip having at least one leg depending therefrom, an arm joined with and extending out from said elongated strip, and an L-shaped member comprising substantially flat first and second legs, said first leg depending from said arm and said second leg extending out from said first leg and away from said elongated strip, said first leg and each of said legs depending from said elongated strip being on the same side of said elongated strip.

4,438,612

SYSTEM FOR THE MUTUAL ANCHORING OF TWO WALLS

Alain Bernard, Marcq-en-Baroeul, and Robert Chedeville, Sailly-lez-Lannoy, both of France, assignors to Couturier S.A., Croix, France

Filed Oct. 27, 1981, Ser. No. 315,471
Claims priority, application France, Apr. 14, 1981, 81 07851
Int. Cl.³ E04B 2/00
U.S. Cl. 52—427 14 Claims



1. A system for mutually anchoring two spaced-apart walls comprising a tie-rod extending between said walls, said tie-rod comprising two sections and tensioning means connecting the two sections end-to-end and means for connecting opposite ends of said tie-rod respectively to said walls, said latter connecting means comprising integral balls on opposite ends of said tie-rod, a tubular sleeve at each end of said tie-rod, said sleeve being open at one end to receive the tie-rod and having

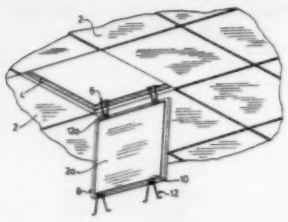
internally a socket to receive the ball at the respective end of the tie rod, said socket presenting around said opening of said sleeve an annular restriction of interior spherical form to constitute a bearing for said ball at the respective end of the tie-rod, said sleeve having moreover a threaded portion, and an anchoring member for anchoring said sleeve to the respective wall, said anchoring member having threads engaging said threaded portion of said sleeve to unite said sleeve with said anchoring member.

4,438,613

SUSPENDED CEILING PANEL SYSTEM

Roy A. Hintsa, Etobicoke, and Tonu Orav, Thornhill, both of Canada, assignors to Decoustics Limited, Rexdale, Canada

Filed Jun. 25, 1981, Ser. No. 277,166
Int. Cl.³ E04B *5/52*
U.S. Cl. 52—484 **26 Claims**



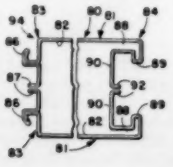
3. A suspended ceiling system comprising a plurality of grid support members, a plurality of ceiling panels each having a body member and a reinforcing edge secured about the top edge of the panel and extending down the side edge thereof, spring means hingedly secured to each of said panels and releasably secured to one of said grid members, wherein said spring means maintains said panel in position against said grid members in one position and in a second position said spring means is selectively disengagable for suspending a ceiling panel generally perpendicular to said grid members, said grid members have a downwardly extending alignment stud which cooperates with the reinforced edge of said panels to accurately align panels with the grid members when positioned thereagainst, said panels including a decorative cover on the lower surface of the panel which extends upwardly along the edges of the panel, whereby when two adjacent panels are secured to the grid members the alignment stud therebetween is not visible due to the decorative cover of said panels extending upwardly along the edges thereof.

4,438,614

DEMOUNTABLE INTERIOR PARTITION SYSTEM AND COMPONENTS THEREFOR

Richard L. Raith, Solon, Ohio, and Joseph A. Davenport, Portland, Oreg., assignors to Hauserman, Inc., Cleveland, Ohio

Division of Ser. No. 882,668, Mar. 2, 1978, Pat. No. 4,251,968. This application Dec. 11, 1980, Ser. No. 215,540
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—580 **5 Claims**



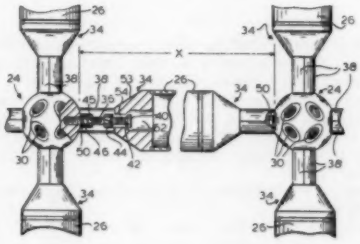
1. A panel for a partition system comprising opposite face plates each forming a face and each being bent inwardly at least at one of its vertical edges and, inwardly recessed from the face, then upon itself to form a double thickness vertically outwardly extending flange recessed from the face, the inwardly bent portion then terminating in an also outwardly extending connecting flange parallel to but offset from the face of each said plate, said face plates at their other ends being bent inwardly to define a relatively deep female channel having inturned edge restrictions, and wherein said first and second connecting flanges of one of said face plates abut the corresponding first and second connecting flanges of the other of said face plates.

4,438,615

ORBA-HUB

Wendel R. Wendel, Plainview, N.Y., assignor to Space Structures International Corp., Plainview, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,801
Int. Cl.³ F04H *12/06*; F16B *7/18*
U.S. Cl. 52—648 **6 Claims**



1. A strut assembly for joining first and second hubs in a space frame including in combination a strut member, first and second bolt means projecting from said strut member, first and second bore sections of said strut member, first and second bore openings of lesser diameter than said bolt means communicating respectively with said first and second bore sections, first conical shoulder means joining said first bore opening and said first bore sections, second conical shoulder means joining said second bore opening and said second bore section, said first and second bolt means respectively projecting in loose fit configuration through said respective bore openings and into respective bore sections, a spherical bearing surfaced nut on the end of each of said bolt means within each said respective bore section engaging said respective conical shoulder, first and second hub abutting means fixed in position on said first and second bolt means respectively providing a known preset spacing therebetween and in which a respective cylindrical collar member surrounding respective bolt means with ends thereof respectively abutting said strut member and a respective hub to provide a compressive load transfer path.

4,438,616

SPACE FRAMES

Edwin T. Codd, 87 Albert St., Brisbane, Queensland, 4000, Australia

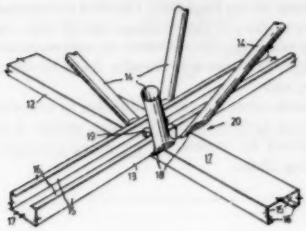
PCT No. PCT/AU81/00089, § 371 Date Feb. 1, 1982, § 102(e) Date Feb. 1, 1982, PCT Pub. No. WO82/00311, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 13, 1981, Ser. No. 354,081
Claims priority, application Australia, Jul. 11, 1980, PE4480
Int. Cl.³ E04H *12/00*
U.S. Cl. 52—650 **4 Claims**

1. A space frame of the type having an upper grid of longitudinal chord members and lateral chord members, a lower grid of longitudinal chord members and lateral chord members, and

diagonal struts interconnecting nodes at chord intersections of the two grids, characterized in that at each node;

(a) one chord member of each grid overlies the other chord member of such grid,

(b) an end of each strut extends from the node and is interposed between the said chord members of each grid,



(c) the strut ends are in adjacent, non-superimposed, relationship, and

(d) each one of the said strut ends is individually secured by a connector member passing through the said strut end and through the adjacent chord members above and below said strut end.

4,438,617

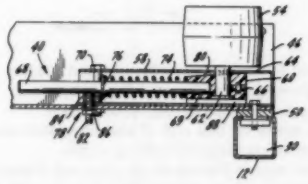
BELT TRACKING AND TENSIONING ARRANGEMENT

Lawrence W. Ulrich, and Connie W. Walker, both of Bolingbrook, Ill., assignors to Durable Packaging Corporation, Chicago, Ill.

Filed Jan. 18, 1982, Ser. No. 340,011

Int. Cl.³ B65B *61/00*

U.S. Cl. 53—137 **10 Claims**



1. In combination with apparatus of the type used for sealing the foldable flaps of cartons, said apparatus including a frame structure, a sealing head means mounted to said frame structure, and a pair of facing longitudinally extending side arm assemblies mounted to said frame structure, said side arm assemblies including moving endless belts positioned to contact the side walls of said carton for movement of same past said sealing head means; an improved endless belt tracking and tensioning arrangement comprising: a first roller member journalled for rotation about a substantially vertical first shaft, said first shaft being rigidly secured to said side arm assembly; a second roller member longitudinally spaced from said first roller for rotation about a substantially vertical second shaft, said second shaft being movably mounted to said side arm assembly for movement towards and away from said first shaft; an endless belt journalled around said first and second roller members; a longitudinally extending channel member rigidly secured to said side arm assembly adjacent to said second roller member; a support block positioned within said channel member and movable longitudinally therein, said second shaft extending into said channel member and rigidly secured to said support block for movement therewith; a control rod member positioned within said channel member, said control rod member having a first end secured to said support block and a second end extending towards said first roller member; a stop means rigidly secured to said channel member intermediate the first and second ends of said control rod member; biasing means extending between said support block and said stop means for biasing said second shaft away from said first shaft; and skewing means associated with a portion of said control rod member spaced from said first end thereof for selectively raising and lowering said portion of said control rod member so as to pivot said support block about a transversely extending horizontal axis and thereby skew said second roller member relative to said first roller member.

4,438,618

APPARATUS FOR STACKING PRINTED PRODUCTS, SUCH AS NEWSPAPERS, PERIODICALS AND THE LIKE, ARRIVING IN AN IMBRICATED PRODUCT STREAM

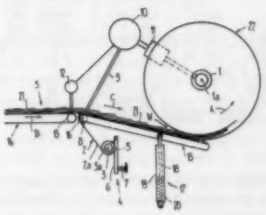
Werner Honegger, Tann-Rüti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jul. 6, 1981, Ser. No. 280,998

Claims priority, application Switzerland, Jul. 15, 1980, 5400/80

Int. Cl.³ B65B *63/04*

U.S. Cl. 53—430 **30 Claims**



1. An apparatus for stacking printed products, especially newspapers, periodicals and the like, arriving in an imbricated product formation, each of said printed products having a trailing edge and a leading edge, comprising:

a rotatably driven winding mandril rotatable about an axis of rotation for winding-up the imbricated product formation into a wound imbricated package formation;

a separation layer connected with the rotatably driven winding mandril and which, during winding of the imbricated product formation, is wound-up under tension in the form of individual tensioned coils between package layers of the wound imbricated package formation;

said separation layer comprising a winding band which is infed to the rotatably driven winding mandril and is under tension;

means including the rotatably driven winding mandril for infeeding the separation layer under tension to the rotatably driven winding mandril and into the wound imbricated package formation;

drive means for driving the winding mandril such that said individual coils of the separation layer which are wound onto the winding mandril are wound thereon under tension;

means for infeeding the imbricated product formation at a predetermined infeed velocity to the rotatably driven winding mandril with the trailing edges of the products of the imbricated product formation bearing upon the separation layer;

means cooperating with said infeeding means for the imbricated product formation and said drive means for accommodating a winding-up velocity of the winding mandril as a function of the predetermined infeed velocity of the imbricated product formation;

means for regulating driving of the rotatably driven winding mandril as a function of the diameter of the wound imbricated package formation; and

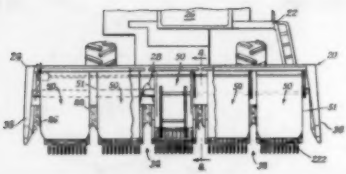
said rotatably driven winding mandril being positioned relative to said separation layer such that the leading edges of the printed products are situated closer to the axis of rotation of said rotatably driven winding mandril than the trailing edges of the printed products which bear upon said separation layer.

4,438,619

CORN HARVESTER COMBINE WITH MEANS FOR PICKING UP LOOSE EARS

Edward J. Heim, R.R. #2, Box 124B, Hoxie, Kans. 67740; Stephen B. Hennessey, 216 SE. Greenroad, Tecumseh, Kans. 66542; Curtis R. Janssen, R.R. #2, Solomon, Kans. 67480; R. Shannon Johnson, 4010 N. Brandywine Dr., Apt. 1023, Peoria, Ill. 61614; Richard B. League, 917 Moro, Manhattan, Kans. 66502; Ronald D. Shinogle, 4010 N. Brandywine Dr., Apt. 1310, Peoria, Ill. 61614, and Richard A. Weber, 513½ Main, Seneca, Kans. 66538

Filed Mar. 17, 1983, Ser. No. 476,279
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—119 **15 Claims**



1. In a mobile corn harvester combine having a corn head comprising a frame with a plurality of forwardly extending horizontally spaced throat portions adapted to be aligned with and moved along a plurality of rows of corn being harvested, a transverse auger conveyor behind the throat portions for conveying corn laterally toward processing mechanism in the machine, each of the throat portions having associated therewith conventional structure including a pair of horizontally spaced stripper plates with snapping rolls and rearwardly moving gathering chains for snapping corn ears from stalks and conveying them to the auger conveyor; means for collecting loose ears of corn from the ground and conveying them to the auger conveyor comprising:

a plurality of conveyor trough means supported by the corn head frame and located forwardly of the frame between adjacent rows of corn, each conveyor trough means extending in a generally rearwardly and upwardly direction and comprising a lower level pickup and receiving section and a higher level discharge section;

said pickup and receiving section having an open grid-like structure comprising finger-like bars parallel to the direction of movement of the harvester, and a ground-engaging skid runner at the forward end of each, each of the skid runners having a forwardly extending lip for picking up ears of corn from the ground, the finger-like bars being pivotally connected to the discharge section and to corresponding ones of the skid runners enabling the finger-like bars to move up and down in response to variations in ground level;

said discharge section comprising a plate having an inlet end portion positioned to receive ears of corn from the pickup and receiving section, and having an outlet end portion positioned to discharge ears of corn onto the gathering chains for transferring ears of corn therefrom to the auger conveyor;

a reel having an auxiliary frame supported by the corn head frame above each conveyor trough means, a pair of horizontally spaced conveyor drive chains trained between forward and rearward sprocket means on the auxiliary frame for orbital movement in a lower conveying run and an upper return run, and having a plurality of movable cross bars supported between the chains for rearward movement with the lower runs of the chains across the pickup and receiving, and discharge sections of the trough means;

power means for driving the conveyor drive chains;

each of the cross bars having a plurality of generally radially extending tines which fit within the spaces between at least some of the finger-like bars and corresponding skid runners to thereby fully engage ears of corn on the forwardly extending lips and move the ears rearwardly along the finger-like bars and transfer them to the discharge section; and

said movable cross bars being effective as conveyor flights to convey ears along the discharge section to the outlet end thereof for transfer to the auger conveyor via the gathering chains.

4,438,620

METHOD AND MEANS OF SERVICING AN OVERHEAD LIMB OF A GROWING PLANT

Paul F. Beardsley, Van Wert, Iowa 50262

Filed Aug. 30, 1982, Ser. No. 412,497
Int. Cl.³ A01D *46/24*
U.S. Cl. 56—332 **14 Claims**

6. A tool for reaching, positioning and holding overhead limbs of growing plants for servicing, comprising,

an elongated member having opposite ends,

a hook means on one end of said elongated member for releasably grasping and holding a limb,

and a foot engaging means on the other end of said elongated member to permit an operator's foot to hold said elongated member and a limb grasped by said hook means in a stabilized position by exerting downward force on said foot engaging means, whereupon both hands of the operator are free to service said limb.

4,438,621

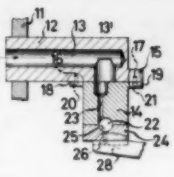
THREAD JOINING DEVICE

Joachim Rohner, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Continuation of Ser. No. 225,636, Jan. 16, 1981, abandoned. This application Jan. 31, 1983, Ser. No. 462,406
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001917
Int. Cl.³ B65H *69/06*; D01H *15/00*; D02J *1/08*
U.S. Cl. 57—22 **6 Claims**

1. Thread joining device, comprising a basic body stationary with respect to threads to be joined, said basic body having a first channel for compressed air formed therein, a plurality of splicing heads for accommodating respective threads of different type, each of said splicing heads having formed therein a splicing chamber for inserting and joining threads and a second compressed air channel for communication between said splic-

ing chamber and said first channel formed in said basic body, and means for interchangeably fastening one of said splicing



heads selectively to said basic body in accordance with the type of threads to be joined.

4,438,622

APPARATUS FOR AUTOMATIC CREELING IN RING SPINNING FRAMES

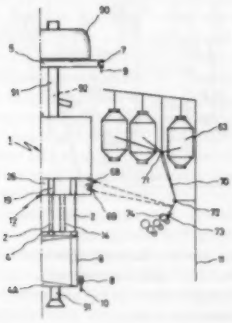
Roberto E. Pons, Ronda General Mitre, 105,4°,1ª Barcelona 6, Spain

Filed Mar. 5, 1982, Ser. No. 355,251

Claims priority, application Spain, Mar. 10, 1981, 500.247

Int. Cl.³ D01H *9/18, 15/00*

U.S. Cl. 57—261 **6 Claims**



1. Apparatus for automatic creeling in ring spinning frames having a plurality of frame spindles for holding bobbins of roving that passes from the bobbins over roving rods to a drafting system of a spinning machine, comprising a frame, means mounting said frame for movement past a plurality of bobbins of a said ring spinning frame, a body movable vertically on said movable frame, means carried by the movable frame for detecting missing roving for each of the frame spindles, means for stopping the movable frame at the location of the missing roving, means on the body for removing the bobbin on the spindle at the location of the missing roving, means on the body for creeling a full bobbin in the place of the removed bobbin, means for retaining the end of the roving from the freshly creeled bobbin, means on the body for gripping said roving end and for passing it about said roving rods to said drafting system, and means for replacing said bobbins on said movable frame.

4,438,623

GRIPPER APPARATUS ON A RING SPINNING OR RING TWISTING MACHINE

Peter Oswald, Matzingen, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

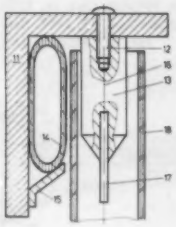
PCT No. PCT/EP81/00174, § 371 Date Jul. 1, 1982, § 102(e) Date Jul. 1, 1982, PCT Pub. No. WO82/01727, PCT Pub. Date May 27, 1982

PCT Filed Oct. 31, 1981, Ser. No. 396,915

Claims priority, application Switzerland, Nov. 13, 1980, 8428/80

Int. Cl.³ D01H *9/00;* **B66C** *1/46*

U.S. Cl. 57—275 **12 Claims**



1. A gripper apparatus for gripping bobbin tubes each having an interior space and placed at a ring spinning or ring twisting machine, said gripper apparatus comprising:

a movable support beam extending along the machine and provided with pegs directed towards the bobbin tubes;

each of said pegs having a tapered front end facing a related one of said bobbin tubes and each peg being insertable into the interior space of the related bobbin tube; and

each said peg being provided with a substantially cylindrical extension formed by an elastically bendable material and extending forwardly from said tapered front end of said peg.

4,438,624

OVERHUNG MOUNTED ROTATABLE CENTERING SPINDLE

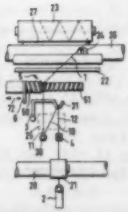
Walter Mayer, and Stephan Wittmann, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 382,964

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121759

Int. Cl.³ D01H *15/00;* **B65H** *57/00, 69/00*

U.S. Cl. 57—352 **5 Claims**



1. A centering spindle for centering a yarn at an open-end spinning position and the like of the type having a central peripheral groove into which open threaded grooves run together oppositely from both sides, comprising:

a first longitudinal section of said grooves running into said central groove from one side thereof;

a second longitudinal section of said grooves running into said central groove from a second side thereof and extending away therefrom to a free end of said spindle;

said centering spindle being reversibly rotatable so that a yarn engaged thereby travels from said central groove to said free end and is there ejected from said spindle; and

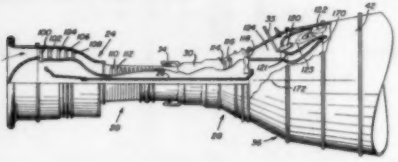
said threaded grooves of said first and second sections having different core diameters.

4,438,625

REHEAT GAS TURBINE COMBINED WITH STEAM TURBINE

Ivan G. Rice, P.O. Box 233, Spring, Tex. 77373

Division of Ser. No. 954,838, Oct. 26, 1978, Pat. No. 4,272,953.
This application Jan. 13, 1981, Ser. No. 224,496
Int. Cl.³ F02C 6/18
U.S. Cl. 60—39.17 **21 Claims**



1. In an apparatus for the production of useful power including a gas compressor for receiving ambient air and for producing a high pressure air, a generator turbine drivingly connected by a generator shaft to said compressor, a first combustor receiving gas generator fuel and said high pressure air and for forming a combustion gas for driving said generator turbine, said generator turbine driving said compressor and forming a high temperature, high pressure first gas, a reheat combustor for receiving said high temperature, high pressure first gas and reheater fuel and for forming a high temperature, high pressure second gas, a power turbine associated with said reheat combustor for receiving said second gas whereby said power turbine is driven to produce work and an exhaust third gas is produced, the improvement comprising wherein said compressor is capable of producing a pressure ratio of said high pressure air to said ambient air of at least about 18 and a linear axial flow annular diffuser is interposed between said generator turbine and said reheat combustor for reducing the velocity of said first gas, said annular diffuser having a length of at least about 4 feet to prevent separation and resulting turbulence of said first gas during deceleration, said generator turbine, annular diffuser, reheat combustor, and power turbine are sequentially juxtaposed in a linear axial arrangement whereby the flow of gas from said generator turbine sequentially through said annular diffuser, said reheat combuster and said power turbine is substantially parallel to the linear axis of said arrangement.

4,438,626

APPARATUS FOR ATTACHING A CERAMIC MEMBER TO A METAL STRUCTURE

Stephen B. Berestecki, Lynnfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Sep. 11, 1981, Ser. No. 301,172
Int. Cl.³ F02C 7/20
U.S. Cl. 60—39.32 **17 Claims**

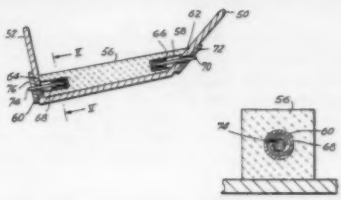
1. Apparatus for mounting a ceramic member to a metallic structure in a thermally cyclic environment, comprising:

at least one bore in said ceramic member;

at least one metallic pin passing through said metallic structure and into said at least one bore;

a scroll-wound metal bushing between each of said metallic pins and each of said bores; and

each of said metal bushings being formed of a metal sheet scroll wound at least one and one quarter turns to provide at least one quarter turn overlap, overlapping portions of said bushing being spaced from each other for resiliently



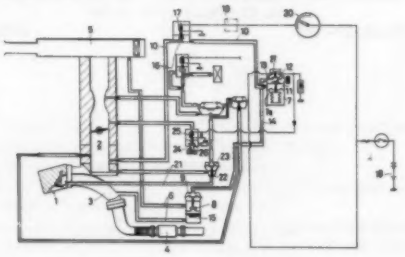
accommodating differential thermal loading of said ceramic member and said metallic structure.

4,438,627

EXHAUST GAS PURIFICATION APPARATUS IN INTERNAL COMBUSTION ENGINE

Osamu Gotoh, Higashikurume, and Akira Fujimura, Niiza, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,689
Claims priority, application Japan, Nov. 18, 1980, 55-161432
Int. Cl.³ F01N 3/22
U.S. Cl. 60—278 **6 Claims**



1. An exhaust gas purification apparatus for a lean mixture internal combustion engine comprising:

an intake passage means;

an exhaust passage means;

a catalyzer for exhaust gas purification coupled to said exhaust passage means;

an external air introducing passage means connected to said exhaust passage means on the upstream side of said catalyzer;

a first detecting means connected to said intake passage and operable in response to negative intake pressure above a predetermined value for detecting deceleration of said engine;

a second detecting means operable in response to vehicle speed above a predetermined value; and

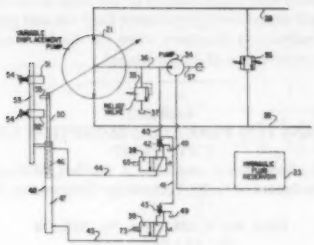
a control valve means positioned in said external air introducing passage means and connected to said first and second detecting means, whereby said control valve means is opened upon concurrent operation of said first and second detecting means to introduce external air into said exhaust passage means only during deceleration from high speed.

4,438,628

PUMP JACK DRIVE APPARATUS

Reginald D. Creamer, 228 Spring Haven Ct., Airdrie, Alberta, Canada

Filed Dec. 19, 1980, Ser. No. 218,038
Int. Cl.³ F04B 35/00
U.S. Cl. 60—374 1 Claim



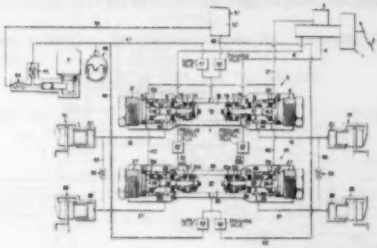
1. A driving apparatus for a pump jack of the type including a samson post, a walking beam pivotally mounted on the samson post for rotation around a horizontal axis, a horsehead on one end of the walking beam for driving connection to a pump mechanism, said apparatus comprising first cylinder means pivotally mounted on said samson post; first piston rod means associated with said first cylinder means and pivotally connected to said walking beam on one side of said horizontal axis for moving said one end of said walking beam upwardly upon extension of said first piston rod means with respect to said first cylinder means; second cylinder means pivotally mounted on said samson post; second piston rod means associated with said second cylinder means and pivotally connected to said walking beam on the other side of said horizontal axis for moving said one end of said walking beam downwardly upon extension of said second piston rod means with respect to said second cylinder means; adjustable control means for alternately extending said first and second cylinder means, said control means comprising a variable displacement pump, control piston and cylinder means mechanically connected to said variable displacement pump for controlling the operation thereof and including a pair of adjustable limit stops for said control piston and cylinder means for independently controlling the extension speed of said first and second cylinder means, a fixed displacement pump for supplying fluid under pressure to said variable displacement pump and through a pair of solenoid valves to said control piston and cylinder means, adjustable means for controlling the flow rate of fluid through said solenoid valves for independently controlling the acceleration rates of said first and second cylinder means, switch means actuated by said walking beam at the top and bottom limits of the stroke thereof, said switch means being operatively connected to said solenoid valves for controlling the operation of said solenoid valves and thereby said control piston and cylinder means and consequently the feeding direction of said variable displacement pump, whereby said one end of the walking beam and said horsehead are reciprocated upwardly and downwardly, the upward and downward movements being at the same or different speeds according to the extension speeds selected for said first and second cylinder means.

4,438,629

APPARATUS FOR SIMULTANEOUSLY ADJUSTING FLUID PRESSURES IN A DUAL FLUID SYSTEM AND ASSOCIATED METHOD

Makoto Sato, Kamifukuoka, and Etsuo Fujii, Wako, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1982, Ser. No. 390,039
Claims priority, application Japan, Jun. 25, 1981, 56-98976
Int. Cl.³ F15B 7/08
U.S. Cl. 60—579 13 Claims



1. Apparatus for simultaneously adjusting the fluid pressures in a dual hydraulic circuit arrangement in which in a first hydraulic circuit pressurized fluid is supplied from a first pressure source to a first fluid pressure activated device and in a second hydraulic circuit pressurized fluid is supplied from a second pressure source to a second fluid pressure activated device, said apparatus comprising:

a cylinder having opposite closed ends and including spaced bulkheads therein defining a central chamber between the bulkheads and a pair of chambers on respective opposite sides of the bulkheads,

a pair of spaced first pistons slidably mounted in said central chamber and defining a control pressure chamber therebetween and first and second primary fluid pressure chambers between respective pistons and said bulkheads,

said first primary fluid pressure chamber being connected to said first pressure source while said second primary fluid pressure chamber is connected to said second pressure source,

a pair of second pistons secured for common movement with said first pistons, said second pistons being respectively mounted between said bulkheads and the closed ends of said cylinder and defining first and second secondary fluid pressure chambers between the second pistons and respective bulkheads,

said first and second secondary chambers being respectively connected to said first and second fluid pressure activated devices of said first and second hydraulic circuits, and

means for supplying a pressure fluid at a control pressure from a third pressure source to said control pressure chamber between said first pistons for simultaneously adjusting the pressures in said first and second secondary chambers and thereby in said first and second pressure activated devices of said first and second hydraulic circuits.

4,438,630

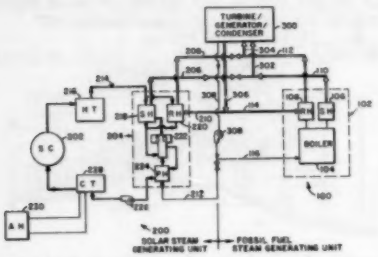
METHOD AND SYSTEM FOR MAINTAINING OPERATING TEMPERATURES IN A MOLTEN SALT CO-GENERATING UNIT

George H. Rowe, Windsor Locks, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 7, 1982, Ser. No. 415,511
Int. Cl.³ F01K 13/00
U.S. Cl. 60—676 2 Claims

1. In a molten salt co-generating steam supply system, the

system including first and second steam supply units connected to a common load, the first unit adapted for continuous steam generation in alternating full system power and part system power output, the second unit adapted for alternating hot shutdown and partial system power generation, the first unit having a steam flow line to the load and a feed-water flow line from the load, the second unit having a primary fluid loop containing a molten salt and a secondary loop containing water as the working fluid, with a steam generating heat exchanger interposed therebetween, wherein the invention is a method of maintaining the steam generator components of the second unit in a hot standby condition when steam is being generated only by the first unit, comprising the steps of:



connecting the first unit steam flow lines to the second unit secondary loop steam flow lines;

connecting the first unit feed-water flow lines to the second unit secondary feed-water flow lines;

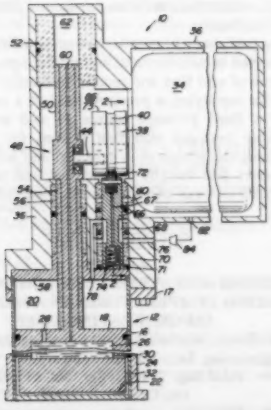
whereby a fraction of the steam generated by the first unit bypasses the load and enters the steam line of the secondary loop, flows in reverse direction through the secondary steam generator and returns to the first unit through the secondary loop feed-water lines, such that the steam generator components are maintained near their normal operating temperatures.

4,438,631

CRYOGENIC REFRIGERATOR

Domenico S. Sarcia, Carlisle, Mass., assignor to CVI Incorporated, Columbus, Ohio

Filed Jul. 15, 1982, Ser. No. 398,482
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **11 Claims**



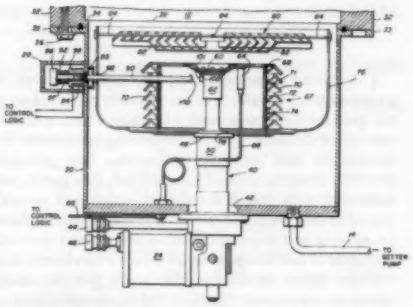
1. In an cryogenic refrigerator in which a moveable displacer means defines within an enclosure first and second chambers of variable volume, and in which a refrigerant fluid is circulated in a fluid path between the first chamber and the second chamber by movement of the displacer means, the improvement comprising chamber means for guiding a slide connected to the displacer means, a moter connected to said slide for reciprocating said slide, a valve having a reciprocal valve member for controlling the flow of high and low pressure fluid, said valve member having a peripheral groove which is of uniform depth at its ends, said moter being connected to a cam arranged to reciprocate said valve member in timed relation with reciprocation of said slide so that the valve member will introduce high pressure fluid via said groove into said first and second chambers when the displacer means is at one of the extremities of its movement.

4,438,632

MEANS FOR PERIODIC DESORPTION OF A CRYOPUMP

Philip A. Lessard, Acton, and Allen J. Bartlett, Milford, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Jul. 6, 1982, Ser. No. 395,120
Int. Cl.³ B01D *5/00*
U.S. Cl. 62—55.5 **7 Claims**



1. A cryopump comprising:

a primary cryopanel within the cryopump associated with a low temperature heat sink having means for adsorbing a first low boiling point gas,

a secondary cryopanel associated with a higher temperature heat sink having means for condensing a higher boiling point gas,

characterized by:

movable means for selectively conducting heat from outside the cryopump to the primary cryopanel within the cryopump to raise the temperature of the cryopanel above that which is necessary to cause said first gas to become desorbed from said cryopanel.

4,438,633

METHOD AND APPARATUS FOR USING LOW GRADE THERMAL ENERGY TO IMPROVE EFFICIENCY OF AIR CONDITIONING AND REFRIGERATION SYSTEMS

Leland L. Hiser, P.O. Box 95, New Braunfels, Tex. 78130

Filed Nov. 12, 1982, Ser. No. 441,163
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—116 **16 Claims**

1. An air conditioning and refrigeration system comprising:

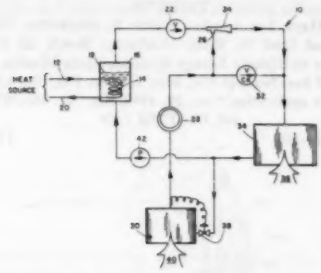
first compressor means;

condenser means for receiving a pressurized refrigerant in a vapor form from said first compressor means, said condenser means converting said vapor form to a liquid form by giving off heat;

expansion means receiving said liquid form of said refrigerant and allowing passage therethrough;

evaporator means receiving said refrigerant from said expansion means and converting said refrigerant to a vapor form by absorbing heat, said vapor being received by said first compressor means for pressurization prior to said receiving by said condenser means;

jet compressor means operated by an expanding vapor, said jet compressor flowing said expanding vapor therethrough to draw a lower pressure at a first orifice thereof,



said first orifice being in operative communication with said first compressor means to reduce pressure across said first compressor means;

boiler means for vaporizing a fluid therein utilizing a heat source to provide said expanding vapor for said jet compressor means, said boiler means being in flow communication with said jet compressor means; and

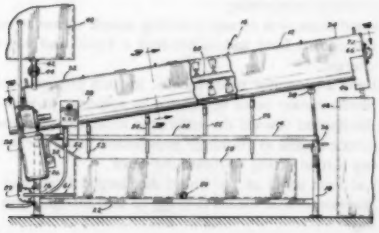
pump means for returning condensed fluid of said expanding vapor from said jet compressor means to said boiler means.

4,438,634

FREEZE CONCENTRATION APPARATUS

Rene Merle, New Hope; Myron Uecker, Buffalo, and Robert Kozlik, Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 5, 1982, Ser. No. 439,448
Int. Cl.³ B01D *9/04*; C02F *1/22*
U.S. Cl. 62—123 **10 Claims**



1. An apparatus useful in the freeze concentration of partially frozen slush having an ice crystal phase and a liquid phase, comprising:

a trough having a first end and an opposed second end;

means for elevating the second end relative to the first end;

means for feeding the slush to the trough proximate the first end;

means for discharging the ice crystal phase proximate the second end;

means for discharging the liquid phase from the underside of the trough;

auger means for advancing the slush along the trough;

a first means for damming the slush, said first dam means adjustably mounted in said trough thereby defining a recrystallizer section of the trough; and

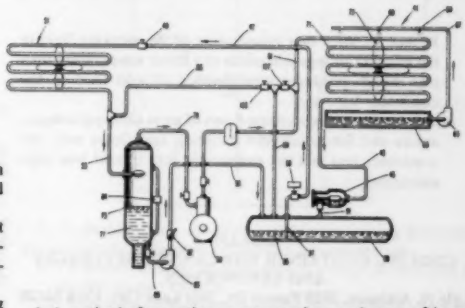
second means for damming the slush adjustably mounted in said trough intermediate the first dam means and the ice crystal discharge means thereby defining a first ice drainage section and a second ice drainage section of the trough.

4,438,635

EVAPORATIVE CONDENSER REFRIGERATION SYSTEM

William J. McCoy, Jr., 1029 Southgate Rd., Knoxville, Tenn. 37919

Filed Mar. 4, 1981, Ser. No. 240,565
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—305 **12 Claims**



1. A method of operating an evaporative condenser refrigeration system, comprising the steps of:

selecting a suitable condensing temperature differential;

selecting a suitable condenser having a sufficient capacity for operation at the average wet bulb temperature of the locality of the system and at the selected temperature differential;

operating the evaporative condenser without capacity controls and at full capacity at all times during operation of the refrigeration system;

permitting the condensing temperature of the working fluid in the condenser to continuously follow the prevailing wet bulb temperature of the locality;

maintaining a seperation between a high pressure portion and a low pressure portion of the refrigeration system; and

controlling the flow rate of condensed working fluid to an evaporator with a flow control valve downstream of the separation between the high and low pressure portions.

4,438,636

HEAT-ACTUATED AIR CONDITIONER/HEAT PUMP

Dean T. Morgan, Sudbury, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Jun. 21, 1982, Ser. No. 390,596
Int. Cl.³ F25B *3/00, 29/00*
U.S. Cl. 62—325 **9 Claims**

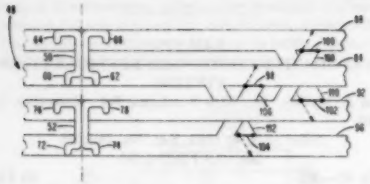
1. A heat-actuated air conditioner/heat pump comprising:

a first heat pipe assembly including at least one sealed tube having a central portion in fluid communication with a condenser leg and an evaporator leg and adapted to carry a working fluid therein, said tube being rotatable about an axis lying substantially in said central portion, said condenser leg located at a radius R_c from said axis of rotation, and said evaporator leg located at a radius R_e from said axis of rotation, R_c being greater than R_e and R_e being comparatively small;

a second heat pipe assembly substantially identical to said first heat pipe assembly, said second assembly being axi-

ally displaced from said first assembly and rotatable about said axis;

means for rotating said heat pipe assemblies about said axis to produce a vapor pressure differential of said fluid in the condenser and evaporator legs of each assembly, the speed of rotation being selected in conjunction with the molecular weight of the working fluid and the values for



R_c and R_e, such that evaporation of the working fluid in the evaporator legs will occur at a lower temperature than that which produces condensation of said fluid in the condenser legs; and

means for providing separate flows of air at different temperatures and for selectively directing said flows onto the condenser legs and the evaporator legs of said heat pipe assemblies.

4,438,637

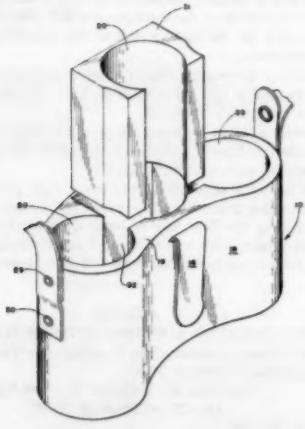
COOLING CONTAINER FOR CANNED BEVERAGES AND SANDWICHES

Lyle H. Atkinson, 3828 Pavant Dr., Salt Lake City, Utah 84120

Filed Aug. 19, 1982, Ser. No. 409,545

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **8 Claims**



1. A portable cooling container for transporting and cooling canned beverages, comprising in combination:

a curved bottom housing having a plurality of vertically oriented conical compartments for holding canned beverages, said housing having walls of insulating material which surround said compartments;

a removeable center block in said bottom housing for providing a receptacle for sandwiches surrounded by insulating material;

a correspondingly curved top housing having walls of insulating material and having a plurality of recessed cavities therein correspondingly to said vertically oriented compartments in said bottom housing;

a coolant disposed in the upper ends of each respective recessed cavity of said top housing;

flexible means attaching said bottom housing to said top housing; and

means for carrying said top and bottom housings.

4,438,638

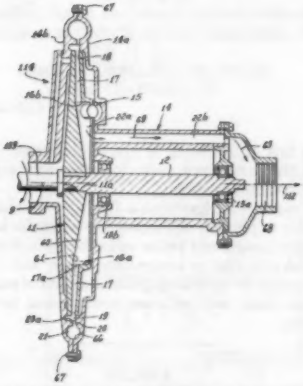
REFRIGERATION PROCESS USING TWO-PHASE TURBINE

Lance G. Hays, Los Angeles; Walter R. Studhalter, Woodland Hills, and Emil W. Ritzi, Manhattan Beach, all of Calif., assignors to Biphase Energy Systems, Santa Monica, Calif.

Division of Ser. No. 145,470, May 1, 1980, Pat. No. 4,336,693. This application Mar. 29, 1982, Ser. No. 363,397

Int. Cl.³ F25B *1/06*

U.S. Cl. 62—500 **17 Claims**



1. In a refrigeration system employing fluid refrigerant, the system including a flow path wherein the refrigerant is compressed and cooled, the system including expansion means to expand the compressed cooled fluid to a lower pressure level and lower temperature level, and refrigeration ducting through which the expanded fluid passes and absorbs heat, the improvement comprising

(a) said expansion means including nozzle means to receive the cooled fluid and to produce a liquid and vapor discharge,

(b) and a separator rotor located in such proximity to said nozzle means as to be rotated in response to said liquid discharged toward the rotor, the rotor carrying reaction nozzle means to discharge pressurized liquid for developing torque acting to rotate the rotor,

(c) at least some of the liquid discharged from said rotor reaction nozzle means flowing to said refrigeration ducting.

4,438,639

PRESSER FOOT FOR A KNITTING MACHINE

Max W. Betts, Coventry, England, assignor to Courtaulds Limited, London, England

Filed Feb. 12, 1982, Ser. No. 348,357

Claims priority, application United Kingdom, Feb. 17, 1981, 8104943

Int. Cl.³ D04B *7/04*

U.S. Cl. 66—64 **7 Claims**

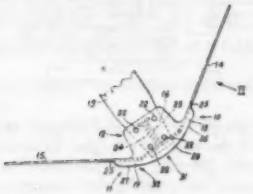
1. A knitting machine with independently operable needles located in opposed needle beds and comprising:

a presser foot device including at least one presser foot for controlling loops during the knitting procedure,

said presser foot having a leading portion and a trailing portion in relation to a direction of movement relative to needles of the machine,

said leading portion comprising a stitch contacting member operative close to both needle beds and stiff so as to resist deformation by knitted loops whereby said member will contact and control knitted loops held on needles of both needle beds, said member including a stitch contacting surface close to both needle beds,

said stitch contacting surface being smoothly curved downwardly and rearwardly in the direction of said relative



movement and having a forward part which is first to contact knitted loops in operation of said presser foot,

said forward part of said stitch contacting surface being inclined to the direction of said relative movement at an angle less than 35°,

said presser foot including a junction region between downward inclination of said stitch contacting surface of said stitch contacting member and rearward extension of said presser foot in said direction of relative movement,

said junction region being located in advance of flush jack position in said knitting machine, and

said trailing portion of the presser foot comprising a resilient elongated element mounted rigid with said leading portion and extending rearwardly therefrom.

4,438,640

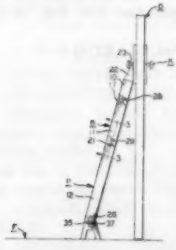
PORTABLE DOOR BRACE

Robert E. Willis, 6606 N. Saginaw, Flint, Mich. 48505

Continuation-in-part of Ser. No. 212,834, Dec. 4, 1980, abandoned. This application Sep. 13, 1983, Ser. No. 532,083

Int. Cl.³ E05B *64/00*; E05C *17/54*

U.S. Cl. 70—94 **4 Claims**



1. A door brace adapted to interengage a door knob or the like on a door and a floor beneath the door comprising:

a plurality of sections interconnected substantially end-to-end and collapsible with respect to each other into a compact form;

means adapted to engage the door knob or the like on the door formed in one end section of said plurality of sections; and

base means formed in the other end section of said plurality of sections, said base means including a main body, means for releasably securing said main body to said other end section, roller means rotatably retained within said main body and movable between a first position wherein said roller means extends below the bottom edge of said main body and a second position wherein said roller means does not extend below the bottom edge of said body, and means for urging said roller means toward said first position such that said roller means normally extends below the bottom edge of said main body.

4,438,641

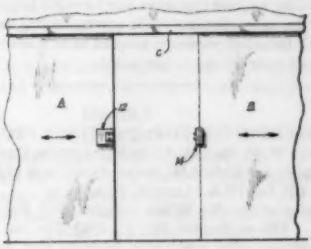
SHIELDED LOCK ASSEMBLY

Ilya I. Levkov, 321 W. 94 St., Apt. 6NW, New York, N.Y. 10025

Filed Oct. 9, 1981, Ser. No. 310,058

Int. Cl.³ E05B *65/52, 67/38, 65/08*

U.S. Cl. 70—95 **14 Claims**



1. A shielded lock assembly suitable for joining first and second members together comprising in combination:

(A) a shackle-bearing element having a body portion and a shackle carried thereby;

(B) a lock body having a keyhole and having a shackle-receiving aperture opening in a given direction and adapted to receive and releasably retain said shackle therein;

(C) a housing adapted to be secured to the first member and having an enclosure adapted to receive said lock body and having access openings communicating with said shackle-receiving aperture and said keyhole, respectively; and

(D) means operatively connected to said housing and engageable with said lock body for retaining said lock body in said enclosure;

said shackle-bearing element being adapted to be secured to the second member such that said shackle is aligned with and enters said shackle-receiving aperture as the first and second members approach each other, said body portion thereof being configured and dimensioned to then cover substantially all portions of said aperture access opening in said housing not occupied by said shackle.

4,438,642

ATTACHMENT DEVICE

Hendrik J. De Jong, Groenlo, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Filed Dec. 17, 1981, Ser. No. 331,791

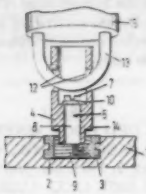
Claims priority, application Netherlands, Dec. 18, 1980, 8006896

Int. Cl.³ F16B *41/00*

U.S. Cl. 70—232 **5 Claims**

1. Attachment device by means of which a safety device can be attached to an article, characterized by a hollow sleeve accommodating a screw member the operation of which enables to attach the attachment device to an article to be protected, said sleeve extending beyond the article-averted end of the screw member and being provided with a transverse bore hole provided in the corresponding end, which transverse bore hole is adapted to receive a lock shackle means which renders the screw member inaccessible to tools and said screw member

has a screw head which rests against an internal shoulder of the sleeve by means of a spring washer, and that the head-averted end of the screw member is provided with a threaded portion



extending beyond the sleeve and having a larger core diameter than the outer diameter of the corresponding end of the sleeve, which threaded portion is adapted to be screwed in a screwed hole of an article to be protected.

4,438,643

MACHINE FOR FORMING TUBES FROM A STRIP

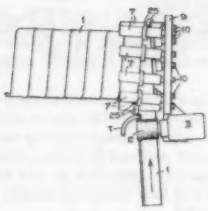
Stanley W. O. Menzel, Adelaide, Australia; David E. Mominee, Alpine, and Gilbert W. Vance, Jamul, both of Calif., assignors to Rib Loc (H.K.) Limited, Hong Kong

Division of Ser. No. 80,044, Sep. 28, 1979, Pat. No. 4,337,564. This application Jun. 21, 1982, Ser. No. 390,517

Claims priority, application Australia, Oct. 6, 1978, PD6282

Int. Cl.³ B21C *37/12*

U.S. Cl. 72—49 16 Claims



1. A machine for forming a tube from a strip which has a rib and a complementary groove extending longitudinally on the strip, said machine comprising:

a support;

joining roller means;

means for mounting the joining roller means for rotation on said support so that the joining roller means can engage the strip;

means to urge the strip forwardly over said joining roller means, said joining roller means allowing said strip to be curved around into a helical convolution with a first part of said strip being fed entering said convolution and a second part of the strip leaving said convolution and with the rib of one of said parts being in registry with the groove of the other of said parts;

said joining roller being engageable with one side of said first and second parts of said strip;

pressure roller means for forcing said rib of said one part into said groove of said other part on the joining roller means while applying a differential driving force to the other side of said first part and to the other side of said second part of said strip which tends to move said first and second parts of said strip forward at different rates of motion to progressively form a helical tube from said strip; and

said joining roller means being undriven so that it does not apply a substantial force to said one side of the strip which would oppose said differential driving force.

4,438,644

FORGING DEVICE

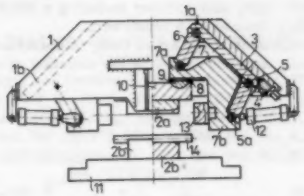
Tadeusz Rut, Poznan, Poland, assignor to Instytut Obrobki Plastycznej, Poznan, Poland

Filed May 27, 1980, Ser. No. 153,783

Claims priority, application Poland, Jun. 9, 1979, 216275

Int. Cl.³ B21K *1/08*

U.S. Cl. 72—356 7 Claims



1. A forging device for mounting between the vertically moving head and the base of a forging press comprising a central work-piece, gripping tool positioned between two work-upsetting tools; said gripping tool comprising two jaws, one mounted to the head of the press and moving vertically therewith and the other mounted to the base and both co-acting to grip the work piece upon vertical movement of the head to said base; said upsetting tools moving transverse to the movement of said head and base, horizontally toward each other along the axis of the work piece held by said gripping tool, each upsetting tool comprising an upsetting-die holder and an upsetting-die mounted thereon, each die holder being coupled to the head by articulated connectors shaped as angular elements surrounding said holding tool having horizontal and vertical arms pivotably connected by bearing members to the press head, said horizontal arm pressing against the jaw mounted to the head to press same to said base mounted jaw; said horizontal arm sliding along said bearing surface directing said vertical arms transverse to the direction of the moving press head to converge said upsetting dies upon said work piece.

4,438,645

LEVELLER FOR MOTOR VEHICLES

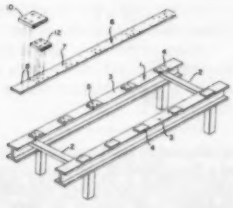
Horst Lutz, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 938,955, Sep. 1, 1978, abandoned. This application Nov. 12, 1982, Ser. No. 441,059

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739368

Int. Cl.³ B21D *1/14*

U.S. Cl. 72—482 11 Claims



1. An aligning stand for motor vehicles with a stand frame comprising longitudinal beams, with

mounting plates being provided on the longitudinal beams of said stand frame,

crossbeams connecting the longitudinal beams and with

said mounting plates being opposite one another and being equipped with fastening holes of a first pattern

intermediate beam means for mounting cross member means, the intermediate beam means being equipped with a first configuration of fastening holes of said first pattern, for mounting to said mounting plates and a second plurality of holes of a second pattern different from said first pattern,

the disposition of the second plurality of holes is developed as a regular pattern extending approximately over the whole length of an intermediate beam means at discrete positions regularly spaced from adjacent positions repetitively, and

cross member means for mounting to said intermediate beam means employing holes of at least one of said first and second patterns.

4,438,646

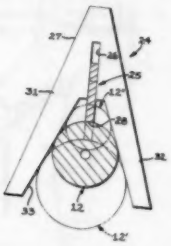
CRANKSHAFT JOURNAL SURFACE GAUGE AND KIT THEREOF

C. John Saban, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 225,921, Jan. 19, 1981, abandoned, which is a continuation of Ser. No. 91,678, May 21, 1979, abandoned. This application Feb. 9, 1981, Ser. No. 232,937

Int. Cl.³ G01B *21/30*

U.S. Cl. 73—105 **8 Claims**



1. A crankshaft journal surface gauge (**10,24**) for detecting the surface irregularities of an arcuate surface (**11**) of a crankshaft journal (**12**) comprising a metallic and magnetized (**16**) plate (**10,25**) having a straight and uninterrupted template edge means (**15,28**) for engaging the arcuate surface (**11**) of said crankshaft journal (**12**), in at least substantial parallel relationship relative to a longitudinal axis (X) of said crankshaft journal (**12**), and for detecting any irregularities in the surface (**11**) of said crankshaft journal (**12**).

4,438,647

IGNITION RANGE DETECTOR FOR INTERNAL COMBUSTION ENGINES

Tadashi Ozaki, Gamagori; Tadashi Hattori, Okazaki, and Hiroaki Yamaguchi, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

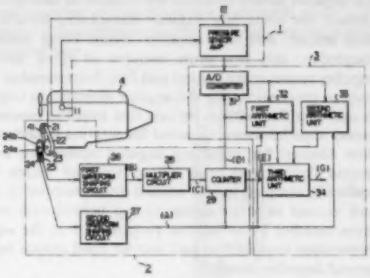
Filed Jan. 5, 1982, Ser. No. 337,247

Claims priority, application Japan, Jan. 8, 1981, 56-705

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—117.3 **6 Claims**

1. An ignition range detector for an internal combustion engine comprising a pressure sensor for detecting the pressure in a cylinder of an internal combustion engine, a crank angle sensor for detecting a first angular position of said internal combustion engine in compression stroke before a combustion and a second angular position of said internal combustion engine in expansion stroke, a processor including a computer for processing a pressure signal from said pressure sensor at each combustion and integrating said pressure signal by a signal associated with the crank angle from said crank angle sensor from said first angular position to said second angular position thereby to calculate a value S_1+S_2, said computer further integrating said pressure signal for a hypothetical case of misfire under the same conditions thereby to calculate a value S, said computer further including means of producing



the ratio $(S_1+S_2)/S_1$ and comparing said ratio with a predetermined value α and producing the result of said comparison.

4,438,648

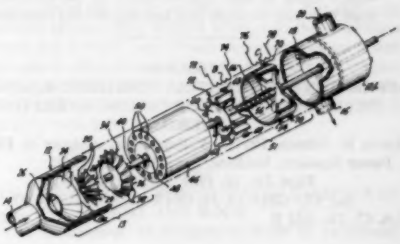
DIFFERENTIAL MASS FLOWMETER

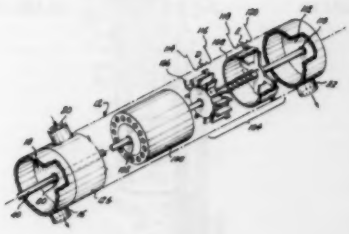
Robert J. Cheney, Jr., Mountlake Terrace, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Filed Jun. 18, 1982, Ser. No. 390,070

Int. Cl.³ G01F *1/82*

U.S. Cl. 73—195 **10 Claims**





1. An apparatus for measuring the difference between the mass flow rate of a first fluid stream and the mass flow rate of a second fluid stream comprising:

means defining a first flow channel through which said first fluid stream passes;

means defining a second flow channel through which said second fluid stream passes;

a first drum member mounted for rotation in said first flow channel;

a second drum member mounted for rotation within said second flow channel;

driving means associated with said first and second drum members for rotating said first and second drum members at identical speed and with a constant phase relationship;

a first impeller means mounted for rotation in said first flow channel for imparting angular momentum to said first fluid stream, and first impeller means being resiliently coupled to said first drum member to allow said first impeller means to lag behind said first drum member by an amount proportional to the angular momentum imparted to said first fluid stream by said first impeller means;

a second impeller means mounted for rotation in said second flow channel for imparting angular momentum to said second fluid stream, said second impeller means being resiliently coupled to said second drum member to allow said second impeller means to lag behind said second drum member by an amount proportional to the angular momentum imparted to said second fluid stream by said second impeller means;

first impeller pick-off means associated with said first impeller means to produce a first impeller signal representative of the instantaneous angular position of said first impeller means;

second impeller pick-off means associated with said second impeller means for producing a second impeller signal representative of the instantaneous angular position of said second impeller means; and

first signal-processing means for receiving said first and second impeller signals and combining them to produce a signal representative of the difference in instantaneous angular position between said first and second impellers which signal is also representative of the difference in mass flow rate between said first and second fluid streams.

4,438,649

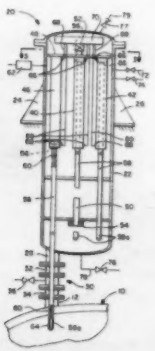
APPARATUS FOR REMOTELY POSITIONING SENSING DEVICES IN A REACTOR DURING OPERATION THEREOF

Harris H. Gilman, Portola Valley, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 29, 1981, Ser. No. 288,381

Int. Cl.³ G01F *15/14*; G01K *1/14*; G21C *17/00*

U.S. Cl. 73—432 R **29 Claims**



11. An apparatus for remote positioning of sensing devices in a reactor under pressure, comprising:

a pressure vessel located adjacent to the reactor, said pressure vessel able to contain the reactor pressure;

a fluid-tight passageway between an outlet of said pressure vessel and an inlet of the reactor;

valve means in said passageway for closing-off said passageway to isolate said pressure vessel from the reactor;

a plurality of hydraulic cylinders rotatably mounted within said pressure vessel about an axis thereof such that any of said cylinders may be aligned with said outlet of said pressure vessel;

a piston with a ram attached thereto in each of said cylinders wherein said ram includes a sensing device;

means for rotating said plurality of cylinders about said axis in said pressure vessel to align any one of said cylinders with said outlet of said pressure vessel; and

means for moving said piston of said cylinder aligned with said outlet of said pressure vessel so that said ram thereof may be inserted into and removed from the reactor through said passageway.

4,438,650

ANTI-G SUIT TEST RIG

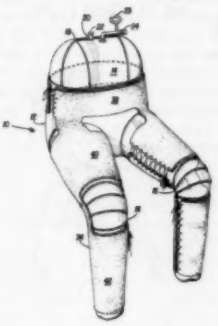
Larry F. Meek, Waterloo, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Mar. 2, 1982, Ser. No. 354,039

Claims priority, application Canada, Mar. 30, 1981, 374186

Int. Cl.³ G01L *7/00*

U.S. Cl. 73—432 SD **8 Claims**



4. Apparatus for testing an anti-G suit comprising a manikin shaped to correspond to the portion of the human body upon which said suit is designed to fit, said manikin being formed from a flexible material and having fluid inlet means and sealing means to seal said fluid inlet means to retain fluid within said manikin, and pressure sensing means associated with said manikin to determine the pressure exerted on fluid in said manikin by a suit placed upon said manikin.

4,438,651

METHOD AND DEVICE FOR MEASURING THE DENSITY OF FLUIDS PARTICULARLY DREDGINGS

Romke van der Veen, No. 87, van Boetzelaerlaan, 2581 AD The Hague, Netherlands

Filed Sep. 30, 1981, Ser. No. 306,958

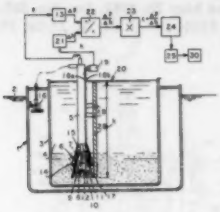
Claims priority, application Netherlands, Oct. 9, 1980, 8005603

Int. Cl.³ G01N *9/00*

U.S. Cl. 73—433 **3 Claims**

1. A method of measuring the density of a fluid contained in a holder, particularly the density of dredgings, in which the density is derived from volume measuring values and weight measuring values, characterized in that in at least two different states t_n and t_{n+1} during measurements carried out on different fluid layers to be metered, for example, at two different instants during loading of the holder weight measuring values G_n and G_{n+1} and volume measuring values V_n and V_{n+1} are measured, that for the state difference $dt = t_{n+1} - t_n$ the differential dG/dV of the weight measuring value dG to the volume measuring value dV is calculated and that the density r is calculated by multiplication of said differential by the constant value c determined by filling the holder with a calibration fluid, for example, water of known density r_1 during a calibra-

tion measurement and by subsequently calculating the constant value c from the product of the known density r_1 and the



differential dV_1/dG_1 of the volume measuring value V_1 to the weight measuring value G_1, expressed in a formula: $r=c\times dG/dV$, wherein $c=r_1\times dV_1/dG_1$.

4,438,652

ULTRASONIC DOPPLER FLOWMETER

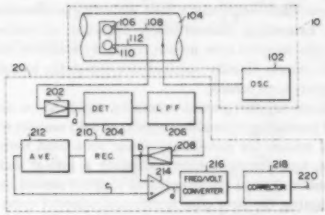
Kouji Saito, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,620

Claims priority, application Japan, Mar. 6, 1981, 56-31358

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.25 **8 Claims**



1. An ultrasonic Doppler flowmeter comprising:

transmitting means for transmitting an ultrasonic wave of a fixed frequency into a fluid flow to be measured;

receiving means for receiving a reflected ultrasonic wave from said fluid; and

signal processing means including a reference signal generator and a comparator, said reference signal generator generating a reference signal upon reception of a received signal from said receiving means in accordance with the magnitude of the received signal, said comparator being supplied with said received signal and said reference signal to compare said received signal with said reference signal.

4,438,653

SUBLANCE FOR MEASURING AND/OR SAMPLING IN A METALLURGICAL FURNACE

Nicolaas H. Beentjes, Uitgeest, Netherlands, assignor to Estel Hoogovens B.V., Netherlands

Filed Jul. 6, 1982, Ser. No. 395,710

Claims priority, application Netherlands, Jul. 10, 1981, 8103306

Int. Cl.³ G01N *1/10*

U.S. Cl. 73—863.11 **4 Claims**

1. In a sublance for use in monitoring the operation of a metallurgical furnace, comprising an elongate outer tubular member an elongate intermediate tubular member located within said outer member and an elongate inner member located within said intermediate member, each said member extending from an upper end of the sublance, at which there are suspension means for suspending the sublance in use and connections for communication with the interior spaces of the sublance, to a lower end of the sublance at which a probe is mounted on the sublance, the sublance further including a rotational coupling so that the probe is rotatable about a longitudinal axis of the sublance relative to the suspension means the improvement that:

said rotational coupling is located so as to divide only said outer tubular member close to said upper end, so that an upper part of said outer member to which part said connections are attached, is fixed relative to the suspension means and a lower part of said outer member on which part said probe is mounted, is rotatable about the longitudinal axis relative to the suspension means and also relative to said inner and intermediate tubular members which are not rotationally divided.

4,438,654

DEVICE FOR TAKING GROUND WATER SAMPLES IN SOIL AND ROCK

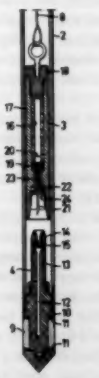
Bengt-Arne Torstensson, 34, Höjdvägen, S-186 00 Vallentuna, Sweden

Filed Mar. 16, 1982, Ser. No. 358,707

Claims priority, application Sweden, Mar. 27, 1981, 8101989

Int. Cl.³ G01N *1/14*

U.S. Cl. 73—864.52 **12 Claims**



1. A device for taking at least one ground water sample in soil and rock, comprising a movable element having an at least partially evacuated sampling container, an end of the container

facing downward being sealed air-tight by a first member of a flexible material, the device further including a ground water collector, a second member of flexible material closing an upper end of the ground water collector, and a cannula with two pointed ends arranged between said first and second members, means for selectively moving the cannula in its longitudinal direction relative to the two members for selectively penetrating the first and second members with a respective one of the ends for transferring a ground water sample from the collector to the sampling container.

4,438,655

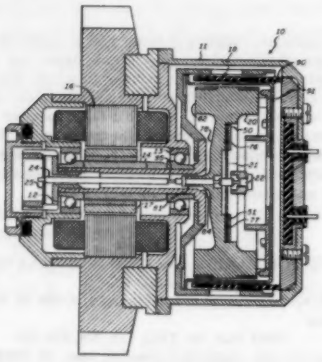
FLEXURE SUSPENSION FOR FREE ROTOR GYROSCOPES

Thomas R. Quermann, Huntington Station, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 15, 1976, Ser. No. 742,158

Int. Cl.³ G01C *19/22*

U.S. Cl. 74—5 F **5 Claims**



1. In gyroscopic apparatus having gyroscopic rotor means adapted for spinning about a spin axis by means of drive shaft means, improved rotor suspension means comprising:

first support means radially supporting said gyroscopic rotor means for rotation with said drive shaft means for universal tilting about axes substantially perpendicular to said spin axis,

second support means coupled to said drive shaft means for rotation therewith substantially about said spin axis and axially supporting said gyroscopic rotor means for universal tilting about said axes substantially perpendicular to said spin axis,

said second support means comprising cylindrical strut means having a strut axis and a first flexible parallel sided flat section lying in the plane of said strut axis,

said second support means extending through an aperture in said first support means with substantially equal parts of said first flexible parallel sided flat section on either side of said aperture, and

second and third flexible parallel sided flat sections lying in the plane of said strut axis and symmetrically spaced on either side of said first flexible parallel sided flat section,

said second and third flexible parallel sided flat sections being disposed at right angles to said first flexible parallel sided flat section.

4,438,656

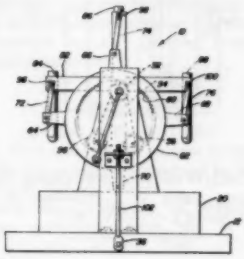
POWER TRANSFER DEVICE

David R. Hayer, R.R. 1, Hoffman, Minn. 56339

Filed May 20, 1981, Ser. No. 265,894

Int. Cl.³ F16H *21/12, 21/48, 25/08;* F03G *3/00*

U.S. Cl. 74—63 **4 Claims**



1. An improved power transfer device comprising:

input means for providing operational power of said device, said input means including:

a power input shaft;

drive gear means operably attached to said power input shaft;

ring gear means in operable engagement with said drive gear means, said ring gear means including a plurality of radially extending, diametrically opposed extensions having weight support arm means rotatably attached thereto;

weight means fixedly secured eccentrically to said weight support arm means;

cruciform support means rotatably mounted on said device and providing rotatable support to said weight means; and

output means for providing power to a load from said device, said output means including a power output shaft connected with the cruciform support means, and means mounting the ring gear means and support arms means to perform planetating movement relative to the axis of the drive gear means responsive to a variation of load on the output shaft whereby variation of load on the output shaft will cause shifting of the center of gravity of the weight means in relation to the ring gear means and cruciform support means.

4,438,657

SHIFT DEVICE FOR THE DRIVE OF A UTILITY VEHICLE

Dieter Nobis, Mannheim, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Sep. 15, 1981, Ser. No. 302,327

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044311

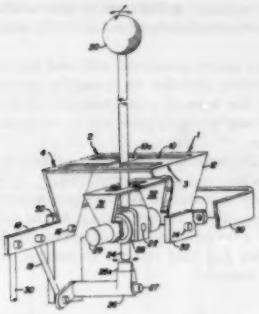
Int. Cl.³ G05G *9/16, 5/10*

U.S. Cl. 74—477 **9 Claims**

1. A shift device for a vehicle drive with a shift lever having a primary shift function for shifting among stages of a multistage transmission, one of the stages being neutral and having a change-over shift function usable in all of the stages, the shift lever being mounted pivotally in two directions and being movable into and out of engagement with shift segments operatively connected to the transmission via shift members, characterized by:

a shift bracket engageable with the shift lever, pivotal in response to movement of the shift lever and having guide slots for receiving and positively guiding the shift lever among the stages, the guide slots including a transverse extending branch and at least one fore-and-aft extending branch, the shift lever being movable to pivot the shift bracket in a direction parallel to the transverse extending

branch when the shift device is in one of its non-neutral stages; and



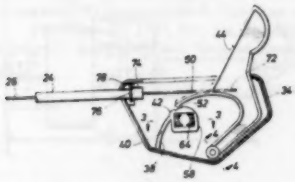
means for preventing the shift lever from pivoting the shift bracket in a direction parallel to the transverse extending branch when the shift device is in the neutral stage.

4,438,658

ENGINE THROTTLE CONTROL

John A. Carlson, Conroe, Tex., assignor to Capro, Inc., Conroe, Tex.

Filed Dec. 14, 1981, Ser. No. 330,595
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **6 Claims**



1. An engine throttle control comprising:

a housing having two sections,

one of said sections including a wall having an interior surface and an exterior surface with a peripheral flange being substantially perpendicular to the interior surface of said wall, a boss on the interior surface of the wall having an opening extending through the boss and the wall, said boss extending substantially perpendicular to the interior surface of the wall, an arcuate rack having ridges on one surface thereof extending from said wall, and a pivot projection extending from the wall,

the other of said sections including a wall having an interior surface and an exterior surface with a peripheral flange being substantially perpendicular to the interior surface of the other section wall and adapted to engage the flange of said one section, a pair of spaced apart fingers having shoulders on their ends adapted, when said sections are assembled, to extend through the opening in said boss with said finger shoulders engaging the exterior surface of the wall of said one section to releasably retain said sections together, and a pivot projection extending from the other section wall and aligned with the pivot projection of said one section when said sections are assembled, and

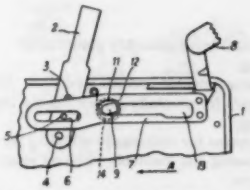
a control lever positioned partially between said assembled sections, extending therefrom and having recesses on opposite sides of one end thereof for receiving said pivot projections, an arm extending from said lever with a detent for engaging said arcuate rack to retain said control lever with a detent for engaging said arcuate rack to retain said control lever in its desired position until positively moved to another position.

4,438,659

RELEASE MECHANISM FOR A TRACTION APPARATUS ACTING ON A CABLE WHICH PASSES THERETHROUGH

Andre Desplats, Boulogne Billancourt, France, assignor to Tractel S.A., France

Filed Jul. 8, 1982, Ser. No. 396,540
Claims priority, application France, Jul. 9, 1981, 81 13553
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—529 **2 Claims**



1. In a traction apparatus acting on a cable through two self-clamping jaws by operating either a warping in lever or a warping out lever, the improvement comprising a release mechanism which comprises:

(a) a release lever adapted to longitudinally move in the direction of a longitudinal axis of the apparatus, said release lever presenting:

(b) a front end portion provided with a first longitudinal slit within which engages a pin carried by said warping out lever, and

(c) an intermediate portion provided with another longitudinal slit comprising a portion of reduced width followed by a portion of larger width,

(d) a release control handle rigid with said release lever, and

(e) a locking mechanism which comprises:

(f) a bolt disposed transversely to the apparatus and passing through said portion of larger width of said other longitudinal slit of the release lever, said bolt being adapted to rotate in registering openings of a casing of the apparatus,

(g) a spring co-acting with said bolt to urge same in a locking position in which said bolt engages a shoulder separating the two portions of different width of the other longitudinal slit, thus preventing to move the release lever in a release direction by sliding along said bolt, and

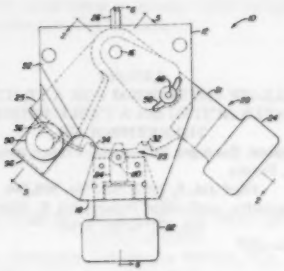
(h) an actuating member extending outside of the casing of the apparatus and rigid with at least one end of the bolt, said actuating member being adapted to be rotated by a user's hand, against the action of said spring, to move said bolt from its locking position to a position in which the bolt is directed along the axis of said another longitudinal slit of the release lever and allows a longitudinal movement of the release lever, so that the release mechanism can be actuated only by pivoting the actuating member of the locking mechanism with one hand of the user while simultaneously the other hand of the user acts on the release control handle to cause the longitudinal movement of the release lever in the release direction thus avoiding any risk of accidental actuation of the release mechanism.

4,438,660

DUAL MODE CONTROL LEVER ASSEMBLY

Carl E. Kittle, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 2, 1981, Ser. No. 307,704
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—531 **33 Claims**



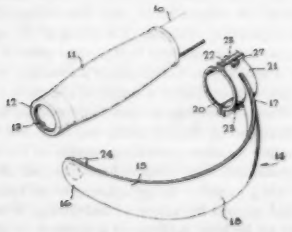
1. A control lever assembly comprising:
a housing;
an operator-movable control lever;
pivot means for pivotally supporting the control lever in the housing;
friction means for frictionally coupling the control lever to the housing and yieldably resisting relative motion therebetween;
resilient means biased to urge the control lever from a displaced position to a neutral position, relative to the housing; and
a selecting member movable between a first position wherein it couples the control lever to the friction means while uncoupling the control lever from the resilient means, and a second position wherein it couples the control lever to the resilient means while uncoupling the control lever from the friction means.

4,438,661

HAND PROTECTOR

Frederick T. Cullen, 16360 Horace Ave., Granada Hills, Calif. 91344

Filed May 29, 1981, Ser. No. 268,492
Int. Cl.³ B62K *21/26*
U.S. Cl. 74—551.9 **1 Claim**



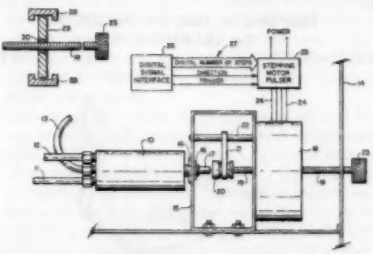
1. A hand protector for use in combination with a handlebar and a handgrip which comprises:
an elongated member having opposite ends separated by an integral mid-section;
said mid-section being of aerodynamic shape having a conical inner surface and substantially arcuate in plan view;
said ends having retainer means for detachably coupling said member to said handlebar about said handgrip;
fastener means releasably coupling said retainer means together;
said retainer means associated with a selected end of said member includes a C-clamping device attached to said handlebar immediately adjacent to the end of said handgrip;
said retainer means associated with said non-selected end of said member includes an inwardly projecting element entering the bore of said handlebar to retain said non-selected end to said handlebar in cooperation with said handgrip;
said inwardly projecting element is a tapering nub terminating at its free end in a rounded end;
said member mid-section incorporates a compound curvature substantially corresponding to the general over-all shape of a driver's knuckles grasping said handgrip; and
said member and said retainer means are composed of a resilient material.

4,438,662

AUTOMATIC CONTROL SYSTEM HAVING MANUAL CONTROL ENGAGEABLE AT WILL

Eric K. Walton, 1516 Doone Rd., Columbus, Ohio 43221, and Gary W. Harris, 5120 Thompson La., Delaware, Ohio 43015

Filed Apr. 2, 1981, Ser. No. 250,356
Int. Cl.³ F16H *25/20*; F15B *5/00*
U.S. Cl. 74—625 **10 Claims**



1. In a device for exercising control over a further member, which further member may be remotely located from said device, wherein said device includes an external power supply for exercising said control, the combination of a linear stepping motor and a remotely adjustable pulser for directing the exercise of said control, a coupling means between said linear stepping motor and said external power supply which is laterally movable and retained from rotational movement by sliding friction means, and a manually operated means which is capable of overcoming the friction forces of said sliding friction means restraining said coupling means and thus directing the exercise of control.

4,438,663

PLANETARY TRANSMISSION GEARING AND OUTPUT SHAFT RETENTION MEANS

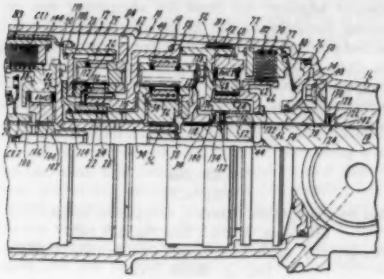
Peter Eichenberger, Livonia, and John H. Lodge, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 15, 1981, Ser. No. 283,395
Int. Cl.³ F16H *57/10*
U.S. Cl. 74—760 **6 Claims**

1. In a planetary transmission for an automotive vehicle having aligned input and output shafts, a transmission case, said shafts being journalled within said case;
planetary gearing within said case adapted to provide plural torque delivery paths between said input shaft and said output shaft;
said output shaft having a splined connection with a torque output element of said planetary gearing;

a first thrust reaction bearing assembly formed on said output shaft contacting a reaction wall on said casing whereby inbound thrust forces on said output shaft are transmitted directly to said casing;

a second thrust reaction bearing assembly on said output



shaft situated contacting another reaction wall on said case whereby outbound thrust forces on said output shaft are transmitted directly to said case; and

spring means for cushioning the transfer of outbound thrust forces from said output shaft to said case through said second thrust reaction bearing assembly.

4,438,664

SYSTEM FOR OPERATING THE DRIVE OF A VEHICLE

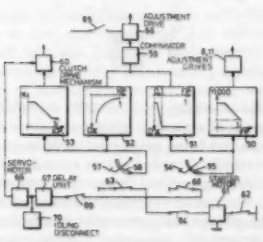
Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,662

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036327

Int. Cl.³ B60K *41/14*

U.S. Cl. 74—866 **5 Claims**



1. In a vehicle drive having an internal combustion engine coupled through a clutch to an infinitely variable transmission, the transmission having input cone pulleys and output cone pulleys and driving a reversible planetary gear train for imparting motive power to an axle, a clutch pedal for acutating the clutch, and an accelerator pedal coupled to the fuel delivery mechanism of the engine; a system for operating the drive comprising:

control signal generating means for controlling the infinitely variable transmission and including first storage means responsive to the position of said accelerator pedal for selecting a first stored value corresponding to a gear ratio of said infinitely variable transmission according to a plot of gear ratio vs. accelerator pedal position;

means for adjusting the gear ratio of said infinitely variable transmission in response to said selected value;

second storage means responsive to the position of said accelerator pedal for selecting a second stored value for said fuel delivery mechanism according to a plot of said second stored value vs. accelerator pedal position;

third storage means responsive to the position of said clutch pedal for selecting a third stored value for said fuel delivery mechanism according to a plot of said third stored value vs. clutch pedal position;

comparison means coupled to said second and third storage means for selecting the smaller of said second and third stored values for said fuel delivery mechanism; and

means for adjusting said fuel delivery mechanism in response to said value selected by said comparison means.

4,438,665

CONTROL SYSTEM FOR AN AUTOMOBILE DRIVE

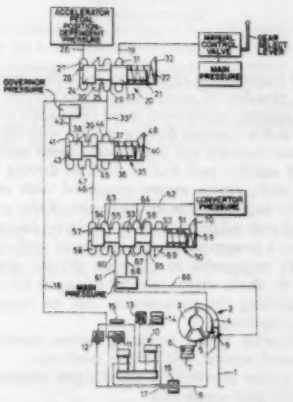
Dieter Schmidt, Gifhorn, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 10, 1981, Ser. No. 242,282

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010509

Int. Cl.³ B60K *41/10*

U.S. Cl. 74—867 **4 Claims**



1. In combination a hydrodynamic-mechanical transmission and a control system therefor, for use in an automobile having an accelerator pedal, a drive select lever having a plurality of positions, including forward drive, a source of first pressurized fluid, and a manual control valve, responsive to the position of said lever, for selectively delivering said first fluid when said select lever is in the forward drive position, wherein said transmission comprises:

(a) a hydrodynamic torque converter having a hydraulically actuatable by-pass clutch;

(b) a mechanical planetary gear train; and

(c) at least one hydraulically actuatable control element for selectively coupling said torque converter and said gear train; and wherein said control system comprises:

(i) a first pressure medium line adapted to be connected to said manual control valve for receiving said first pressurized fluid and communicating with said control element for supplying said first pressurized fluid to said element for actuating said control element,

(ii) a main control valve means arranged in said first pressure medium line for selectively interrupting the delivery of said first fluid to said control element,

(iii) means responsive to at least one automobile operating parameter for actuating said main control valve means, and

(iv) means for delivering a pressurized fluid to said by-pass clutch for selectively actuating said by-pass clutch, wherein the means for delivering pressurized fluid to said by-pass clutch are responsive to the actuation of

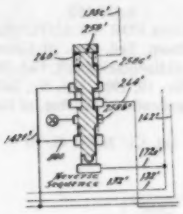
said main control valve means for interrupting the delivery of pressurized fluid to said by-pass clutch when said main control valve means is actuated.

4,438,666

SPEED RESPONSIVE REVERSE CONTROL

E. James Lane, Highland, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 16, 1981, Ser. No. 331,396
Int. Cl.³ B60K *41/10, 41/22*
U.S. Cl. 74—868 **5 Claims**



3. In a transmission of the type including input and output shafts; a plurality of power paths disconnectable from both shafts; a plurality of forward speed ratio gears associated with one path and in constant driving relation with one of the shafts; at least one forward and one reverse speed ratio gear associated with another path and in constant driving relation with the one shaft; clutch means associated with each gear and selectively engageable to connect one of the gears with the associated path while the path is otherwise disconnected from the shafts; a powershift clutch associated with each path and alternately engageable to complete driving communications between the shafts via the selected one gears for up, down, and reverse shifting the transmission; and an improved control system comprising:

shift selector means including means moveable between forward, neutral, and reverse positions;

signal means providing a speed signal proportional to the output shaft speed; and

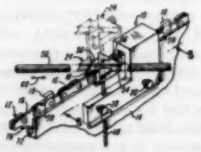
means operative to effect engagement of said one clutch means associated with the reverse gear in response to said speed signal representative of the output shaft speed below a predetermincd magnitude and independent of said shift selector means position.

4,438,667

SHARPENING DEVICE FOR A CHAIN SAW

Voris E. Hannah, Rte. 1, Wingo, Ky. 42088

Filed Apr. 15, 1982, Ser. No. 368,638
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—36 **13 Claims**



1. A sharpening device for guiding and supporting a file for sharpening the cutting elements of a chain saw, the chain saw having a chain bar about which a chain having the cutting elements travels, the sharpening device comprising:

a top guide portion for supporting the file and including at least one pin projecting therefrom; and

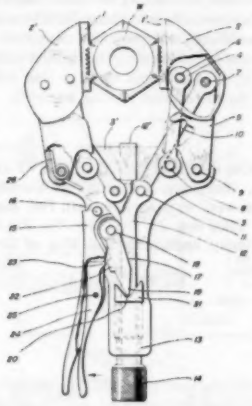
a base portion, said base portion including means for removably securing said base portion to the chain bar and means for supporting said top portion for movement from a first position adjacent the chain for sharpening one of the cutting elements located at the sharpening device to a second position away from the chain to permit indexing of the chain to locate another of the cutting elements at the sharpening device, said means for supporting said top portion including a bore in said base portion for receiving said pin for longitudinal sliding movement therein.

4,438,668

WRENCH

Yeheskel Solomon, Gush Etzion 3, Givatayim, Israel

Filed Jan. 5, 1982, Ser. No. 337,145
Claims priority, application Israel, Jan. 5, 1981, 61855
Int. Cl.³ B25B *7/12*
U.S. Cl. 81—352 **4 Claims**



1. A wrench comprising two mutually movable jaws, each mounted by means of a parallel linkage to a housing constituting the handle, a rod being axially movable in said handle by means of an internally threaded sleeve extending into the bottom end of the handle, said rod being connected at its top by a pivotal link to the top of the outer member of said parallel linkage, a locking lever being pivotally attached to said housing and having pivotally connected thereto a wedge-shaped stop member which is adapted to engage a locking sleeve loosely mounted on said rod, the rotation of said threaded sleeve adjusting the distance between the jaws, the engagement of said stop member with the locking sleeve preventing their movement when said jaws are in working position.

4,438,669

ADJUSTABLE RATCHET PLIERS

Charles E. Hastings, deceased, late of Orlando, Fla., by June Hastings, heir, 3404 Paris Pl., Orlando, Fla. 32808

Continuation-in-part of Ser. No. 101,552, Dec. 10, 1979, Pat. No. 4,269,089, and Ser. No. 963,433, Nov. 24, 1978, abandoned. This application May 14, 1981, Ser. No. 263,749
The portion of the term of this patent subsequent to May 26, 1981, has been disclaimed.
Int. Cl.³ B25B *7/04*
U.S. Cl. 81—410 R **4 Claims**

1. An adjustable ratchet pliers comprising in combination:

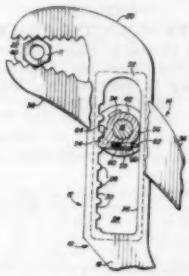
a first jaw member including a handle and a jaw portion said

first jaw member having an elongated slot formed therein with a plurality of notches formed in at least one elongated side of said elongated slot;

a second jaw member including a handle and a jaw portion, said second jaw member being pivotally coupled to said first jaw member;

slide track means formed along the sides of said elongated slot in said first jaw member, said slide track means including a sunken area located outwardly and along at least two elongated sides of said elongated slot in said first jaw member;

slide means for sliding said second jaw member relative to said first jaw member, said slide means having a shaft and a sliding member, said shaft being connected to said second jaw member and extended through said elongated slot in said first jaw means, said slide member being attached to said shaft and slidably positioned on said slide track, and said sliding member being a flat member having a width greater than said elongated slot, substantially equal to the width of said sunken area and sliding in said slide track means sunken area adjacent said elongated slot in said first jaw member thereby laterally positioning said



shaft in said slot regardless of the longitudinal position therein;

locking means pivotally mounted on said slide means shaft relative to said sliding member and extending into said elongated slot for engaging said notches therein, said sliding member thereby also laterally positioning the pivotal axis of said locking means, biasing means including means engaging said locking means and pivotally biasing said locking means about said pivotal axis relative to said sliding member into engaging position within at least one of said notches;

releasing means for rapidly releasing said locking means from a notched position, said releasing means including a means on said locking means engagable for rotating said locking means relative to said slide member against the bias of said biasing means out of engagement with said notches for permitting said slide member to slide on the sunken area of said track means thereby permitting said second jaw to be slid relative to said first jaw for moving said jaws to open position, said locking means and notches being shaped to permit said jaws to be slid into closed position when said locking means is in a notched position engaging said notches.

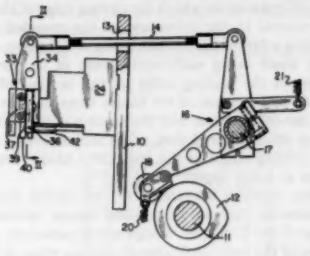
4,438,670

HIGH SPEED WELDER WITH MAGNETIC ALIGNMENT OF WELDING SLUG AFTER CUTTING

Martin D. Johnson, Hadley, Pa., assignor to Electronic Equipment Development Ltd., Toluca Lake, Calif.

Filed May 24, 1982, Ser. No. 381,178
Int. Cl.³ B26D *3/16*; B23D *21/00*
U.S. Cl. 83—154 **1 Claim**

1. In a device for cutting slugs from ferromagnetic feedstock, a die defining an elongate bore into which the feedstock is passed, a knife pivotally mounted to rotate in a plane substantially perpendicular to the feedstock as it is oriented by the die, said knife defining an opening therethrough into which the feedstock is passed when the bore in the die and opening in the knife are aligned, said opening in the knife having an edge adjacent the die defining a cutting edge, means for rocking the knife to shear a slug from the feedstock, transfer means for



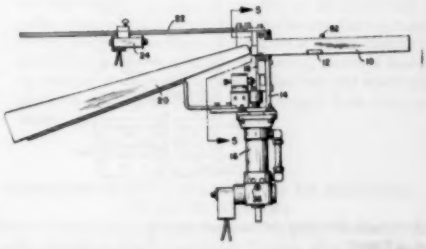
receiving and clamping the cut slug as it is advanced through the opening in the knife, the improvement comprising said die being of a ferromagnetic material and there being a small permanent magnet positioned with one magnetic pole abutting the die near the cutting end thereof whereby the slug when cut free moves to align itself end to end with the feedstock emerging from the die without losing its orientation.

4,438,671

CUTTER FOR SLOT WEDGES

Stephen Weirich, and James L. Crothers, both of Lenni, Pa., assignors to Lenni Products, Inc., Lenni, Pa.

Filed Nov. 8, 1982, Ser. No. 439,730
Int. Cl.³ B26D *5/38*
U.S. Cl. 83—212 **13 Claims**



1. Apparatus for cutting slot wedges for electrical rotating machines from wedge stock, the stock consisting of elongated strips of insulating material having generally U-shaped transverse cross-sections, the apparatus comprising:

shearing means;

means, located on one side of the shearing means, for guiding wedge stock in a predetermined direction toward the shearing means; and

means located on the other side of the shearing means, and actuable by an end of the wedge stock extending through the shearing means, for actuating the shearing means;

the shearing means comprising a frame, a first blade mounted on said frame and having an external U-shaped cutting edge lying in a first plane generally perpendicular to the direction of feed of wedge stock, and a second blade mounted on said frame and having an internal U-shaped cutting edge having a rounded end and substantially straight and parallel sides, said internal edge lying in a second plane immediately adjacent and parallel to said

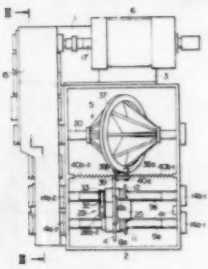
first plane, the U-shaped cutting edges of both blades being substantially symmetrical about a plane of symmetry perpendicular to said first and second planes, the blades being relatively movable, in said first and second planes in the direction of the intersections of said first and second planes by said plane of symmetry, from a rest position in which the rounded end and at least part of the straight sides of the cutting edge of the second blade are external to the curvature of the cutting edge of the first blade to a cut-off position in which the cutting edge of the first blade is external to the curvature of the rounded end of the cutting edge of the second blade, the cutting edge of the first blade being sufficiently wide in the first plane to intersect the cutting edge of the second blade during relative movement of the blades from the rest position to the cut-off position, and the cutting edges of both blades being so configured that, when they intersect each other, the cutting edges of the respective blades intersect each other at acute angles;

whereby relative movement of the blades from the rest position to the cut-off position causes spreading of the sides of the U-shaped wedge stock outwardly against the sides of the internal U-shaped cutting edge of the second blade, followed by cutting of an insulation wedge from the wedge stock.

4,438,672
PIPE SHEARING DEVICE

Yoshikazu Sasaki, 9-1, Sakuradai 4-chome, Nerima-ku, Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,494
The portion of the term of this patent subsequent to Nov. 30, 1999, has been disclaimed.
Int. Cl.³ B26D *1/28, 1/56*
U.S. Cl. 83—319 **4 Claims**



1. A pipe shearing device, comprising:

a. a frame;

b. first and second parallel spline shafts having first and second longitudinal axes respectively rotatably mounted on said frame for rotation about said first and second longitudinal axes;

c. a carriage longitudinally slidably supported on said first and second spline shafts;

d. means for feeding a pipe to be cut along a third longitudinal axis parallel said first and second longitudinal axes;

e. first and second rotary blades mounted to said first and second shafts, respectively, and to said carriage for rotation about said first and second longitudinal axes with said first and second spline shafts and longitudinal movement with said carriage, said first blade being located so as to cut a slit in said pipe when rotated, said second blade being located so as to cut said pipe completely at said slit in one revolution of said second blade;

f. a drum cam having a cam rail, mounted to said frame for rotation about a fourth longitudinal axis parallel said first and second longitudinal axes;

g. means, including a pair of follower rollers rotatably mounted to said carriage engaging opposite sides of said cam rail, for reciprocally moving said carriage longitudinally in response to rotation of said drum about said fourth longitudinal axis;

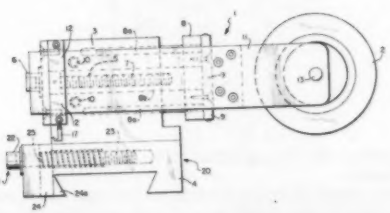
h. means, including a gear train coupled to said first, second and third shafts, for respectively rotating said first, second and third shafts about said first, second and fourth longitudinal axes, respectively, said first and second shafts rotating in opposite directions such that said first blade first cuts said slit in said pipe and said second pipe then cuts said pipe at said slit; and

i. a chuck mechanism disposed on said carriage so as to be longitudinally movable therewith, including first and second arms having a clearance formed therein and respective third and fourth blades fixed thereto so as to be closable about and releasable from said pipe, and drive means for closing said first and second arms so that said third and fourth blades grip said pipe when said first and second blades are cutting into said pipe, said first and second blades extending through said clearance during said cutting.

4,438,673
SLITTER MOUNTING BRACKET

Roy O. Noffke, and Thomas G. Engel, both of Appleton, Wis., assignors to Appleton Papers, Inc., Appleton, Wis.

Filed Sep. 14, 1981, Ser. No. 302,131
Int. Cl.³ B26D *1/24*
U.S. Cl. 83—502 **7 Claims**



1. An apparatus for slitting a continuous web of material which comprises in combination a slitter blade and a slitter mounting bracket, said bracket comprising a bracket housing having a threaded depth-post assembly for enabling precise, effect depth control of said slitter blade, a base mount for supporting said bracket housing and a means for maintaining the proper tension between said slitter blade and a cutting surface, said means comprising a spring tension unit including a blade spring having a forward end and a rear end, a spring mounting band, and a tension regulating means, said slitter blade being mounted to said blade spring at said forward end thereof, said spring mounting band being attached to said bracket housing at a rear portion thereof with said rear end of said blade spring being positioned between said housing and said spring mounting band, with said tension regulating means interacting with said blade spring at the site of location of said spring mounting band where said band is affixed to said housing to regulate said blade tension.

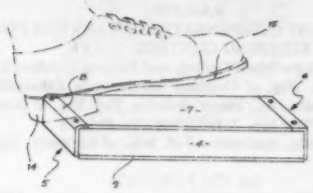
4,438,674
MUSICAL EXPRESSION PEDAL

Richard J. A. Lawson, 8 Mary St., Auburn, New South Wales 2144, Australia

Filed Dec. 11, 1981, Ser. No. 329,877
Claims priority, application Australia, Apr. 11, 1980, PE3086
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **5 Claims**

1. An expression pedal for a musical instrument wherein the pedal or the instrument including the pedal is transportable and thus the pedal is susceptible to detuning by influence from

different surroundings, said pedal comprising a casing having enclosing side walls, forward and rear walls, a bottom and a top all of which comprise capacitive shielding material, an electrically insulating panel over said top of the casing, an electrical proximity responsive device mounted within the



casing and towards said forward wall thereof and exposed to said panel by a hole in said top, and a bevelled edge on an upper corner of said rear end wall, whereby a user's foot when pivoted at the heel upon said bevelled edge with the sole of the foot rising and falling over said proximity device causes varying electrical response in said proximity device.

4,438,675

CABLING FOR SECONDARY AMMUNITION

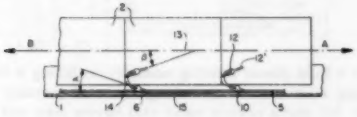
Klaus H. Fischer, and Heinz Kroschel, both of Troisdorf, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Oct. 15, 1981, Ser. No. 311,765

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041149

Int. Cl.³ F41F *1/00, 5/02*

U.S. Cl. 89—1.811 **20 Claims**



1. A cabling arrangement for secondary ammunition arranged in the form of at least two ammunition elements in series in a cylindrical casing of a distribution system and being ejectable therefrom, the cabling arrangement serving for supply of at least one of electrical energy and information to the secondary ammunition, the cabling arrangement comprising a continuous electrical conductor system extending substantially in the longitudinal direction of the casing, the conductor system being provided with terminals at spaced positions along the conductor system so that respective ones of the spaced terminals are correlated with respective ones of the individual series arranged ammunition elements, the terminals establishing defined separating zones between the conductor system and the individual ammunition elements.

4,438,676

AMMUNITION CONTAINER

Gert Kaustrater, Augsburg, Fed. Rep. of Germany, assignor to Kuka Webrtechnik GmbH, Augsburg, Fed. Rep. of Germany

Filed Jun. 2, 1982, Ser. No. 384,283

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121786

Int. Cl.³ F41D *10/14, 10/42;* **F41F** *9/06;* **F42B** *39/12*

U.S. Cl. 89—34 **4 Claims**

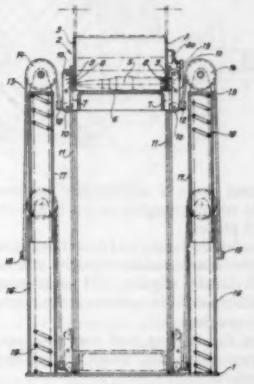
1. Ammunition container comprising:

A. a housing providing a vertical chamber and which is adapted to be positioned beneath or alongside an automatic weapon said chamber having a transverse cross section adapted to the length of the bullets to be received therein and the amplitude of the zigzag placement of the magazine belt therewithin said housing having opposite sidewalls provided with longitudinal slots;

B. a lifting plaiform mounted within said chamber for movement vertically therewithin over a lifting height, said platform having projections thereon extending through said longitudinal slots in said opposite sidewalls of said housing, said slots extending over the lifting height for said platform within said housing;

C. flexible drive means positioned at least partially externally of said housing and having one end connected to said platform projections; and

D. resilient spring biased pulley means acting on said drive



means to maintain the upper level of the ammunition supply upon the platform at approximately the uppermost position, within said chamber, said resilient spring biased pulley means includes spring means being mounted within a pair of telescopically arranged tube sections of which one tube section is permanently secured at its lower end and the other tube section supports at its upper end a pulley over which is passed the drive means, the other end of said flexible drive means being fixed at a point remote to said lifting platform, whereby said spring means is loaded by loading of ammunition on said platform and raises said platform as the ammunition is discharged from the container.

4,438,677

MUNITION-SUPPLY SYSTEM FOR AN ARMORED VEHICLE WEAPON

Markus Spötzl; Erich Drosen, both of Munich; Leonhard Pongratz, Karlsfeld, and Ferenc Kotai, Munich, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,989

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041866

Int. Cl.³ F41H *7/06, 5/20;* **F41F** *9/06*

U.S. Cl. 89—36 K **11 Claims**

1. A weapon supply system for a large caliber weapon comprising:

means forming a munitions compartment rearwardly of said weapon and rotatable therewith upon traversing of said weapon, said compartment having a window opening toward said weapon and through which munitions rounds can be fed to load said weapon;

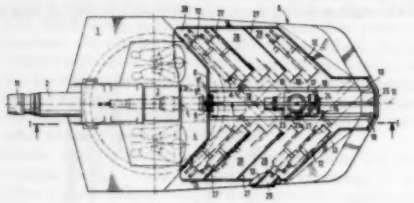
a plurality of holding tubes disposed in said compartment and adapted to receive respective munitions rounds at spaced-apart locations in a plurality of substantially horizontal planes whereby loading tunnel is formed in said compartment in line with said window, said holding tubes being stationary within said compartment, being provided

in arrays on opposite sides of said tunnel, being mutually parallel within each array and having respective round-removal openings turned toward said tunnel; and

a loading mechanism in said tunnel common for all said tubes for removing individual rounds from said holding tubes and feeding said rounds through said window into said weapon said loading mechanism comprising:

round-engaging means engageable with a round in a selected one of said holding tubes,

means for swingably displacing said round-engaging



means about a substantially horizontal axis whereby said round engaging means is positioned selectively in said planes,

means for displacing said round-engaging means angularly about a substantially upright axis for selectively and individually aligning said round-engaging means with each of said holding tubes at the respective round-removal openings, and

means for shifting said axes and said round-engaging means along said tunnel toward and away from said window.

4,438,678

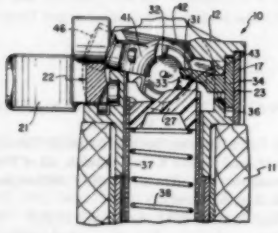
BOLT STOP AND CARTRIDGE EJECTOR FOR AUTO-LOADING RIFLE

William B. Ruger, Southport, Conn., assignor to Sturm, Ruger & Company, Inc., Southport, Conn.

Filed Oct. 23, 1981, Ser. No. 314,437

Int. Cl.³ F41C *15/12*

U.S. Cl. 89—138 **4 Claims**



4. In a firearm having a receiver, a bolt mounted for longitudinal path movement in the receiver, magazine means for delivering a cartridge to the receiver for movement longitudinally in the receiver along a cartridge path and a bolt stop, the improvement comprising

(a) bolt means configured in cross section so that the cross sectional path of the bolt and the cross sectional path of the cartridge are different;

(b) movable finger means mounted adjacent said bolt path and said cartridge path for movement from a first position in which the finger means is positioned in both the bolt path and the cartridge path to a second position in which the finger means is only in the cartridge path; and

(c) magazine follower means to move the finger means to the first position when the magazine follower is in its most upper position and having spring return means to move the finger means to its second position when the follower means is below its most upper position.

4,438,679

AXIAL THRUST COMPENSATING MEANS FOR POWER STEERING CONTROL VALVE

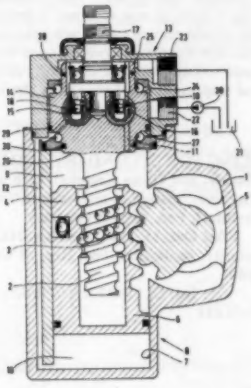
Armin Lang, Schwäbisch Gmünd, and Helmut Knödler, Lorch, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,575

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137366

Int. Cl.³ F15B *9/02*

U.S. Cl. 91—370 **4 Claims**



4. In a fluid power steering assembly including a housing enclosing a servomotor (**8**) having separated pressure chambers (**9**, **10**), and a control valve (**13**) having inlet and outlet ports (**22** and **23**) through which pressure medium is conducted and a valve body (**14**) formed with passages through which the pressure medium is conducted between said ports and the servomotor, the improvement residing in axial thrust compensating means for the control valve comprising two opposing pairs of surfaces (**24**, **25**, **26**, **27**) of equal area formed on the valve body, a first of said pairs of the surfaces (**24** and **25**) being respectively exposed to the pressure medium in the inlet and outlet ports, and the second of said pairs of the surfaces (**26** and **27**) being respectively exposed to the pressure medium in the pressure chambers (**9** and **10**).

4,438,680

GREENHOUSE CONSTRUCTION PROVIDED WITH SPECIAL RIDGE FOR VENTILATION

Christopher Esposito, West Bay Shore, N.Y., assignor to Four Seasons Solar Products Corporation, Farmingdale, N.Y.

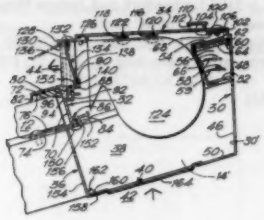
Continuation-in-part of Ser. No. 77,786, Sep. 21, 1979, Pat. No. 4,316,405. This application Jul. 6, 1981, Ser. No. 280,992

Int. Cl.³ A01G *9/24*; F24F *7/00*

U.S. Cl. 98—43 C **18 Claims**

1. A greenhouse construction including first means for abutting a supporting structure and defining a first sloped pocket adapted for receiving the sloped upper extremity of at least one glazing bar and defining a second sloped pocket above said first sloped pocket, second means defining a third sloped pocket adapted for receiving at least one sloped glazing member positioned above the sloped upper extremity of said glazing

bar, and third means coupling said second means to said first means with the second and third pockets in spaced relation



whereby to define an opening for the venting of said greenhouse construction.

4,438,681

INSTALLATION FOR SOLUBILIZING COCOA

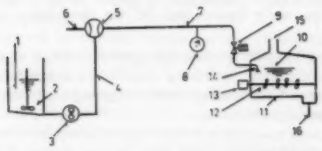
Pierre-Benoit Raboud, Monthey; Frantisek Kubicek, Bossonnens, and Jean-Pierre Bandi, La Tour-de-Peilz, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Division of Ser. No. 106,529, Dec. 26, 1979, Pat. No. 4,349,579. This application Feb. 17, 1982, Ser. No. 349,595

Claims priority, application Switzerland, Jan. 5, 1979, 81/79

Int. Cl.³ A23G *1/00*

U.S. Cl. 99—323.2 **7 Claims**



1. Apparatus for continuously solubilising cocoa comprising:

(a) a reaction tube having an upstream end and a downstream end;

(b) means for continuously advancing cocoa at a predetermined rate into the upstream end of said reaction tube whereby the cocoa so advanced flows through said tube to the downstream end thereof;

(c) discharge control means for maintaining a predetermined superatmospheric pressure within said tube by restricting the flow of cocoa from the downstream end of said tube;

(d) a nozzle having an inlet end and an exit end, said exit end communicating with said tube adjacent the upstream end thereof; and

(e) means for supplying steam to the inlet end of said nozzle under a predetermined pressure more than twice the pressure within said reaction tube; and

(f) means for continuously introducing an alkali carbonate into said reaction tube.

4,438,682

APPARATUS FOR POPPING POPCORN

Michael H. King, Scottsburg, Ind.; Lee W. Poppe, Jr., and Oscar A. Wurtenberg, both of Louisville, Ky., assignors to National ICEE Corporation, Philadelphia, Pa.

Filed Dec. 6, 1982, Ser. No. 447,276

Int. Cl.³ A23L *1/18*

U.S. Cl. 99—323.7 **13 Claims**

1. A corn popping machine adapted for cyclic operation, said machine comprising:

a. a reservoir for unpopped corn;

b. a transparent bell jar;

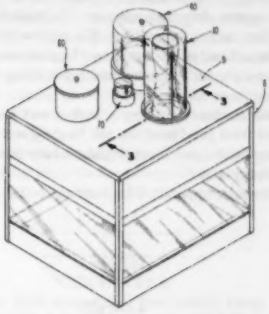
c. a popping tube within said bell jar;

d. an air blower;

e. a heating chamber having a plurality of heating elements;

f. air-flow conveying means coupling said air blower, heating chamber, popping tube and bell jar;

g. a feed conveyor for transporting unpopped corn from said reservoir to the base of said popping tube;



h. a manually operable selector switch adapted to be set at a plurality of set positions;

i. electric means responsive to the position at which said selector switch is set for operating said feed conveyor for a preselected segment of a cyclic time period and for energizing a selected number of heating elements; and

j. means responsive to a change in the setting of said selector switch for changing said time segment and for changing the number of heating elements which are energized.

4,438,683

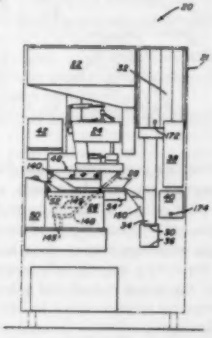
APPARATUS FOR DISPENSING INDIVIDUAL ORDERS OF A HOT FOOD PRODUCT AND COMPONENTS USABLE THEREWITH

William Bartfield, Sherman Oaks, Calif., assignor to Prize Frize, Inc., Sherman Oaks, Calif.

Filed Feb. 26, 1982, Ser. No. 352,579

Int. Cl.³ A47J *37/12*

U.S. Cl. 99—330 **17 Claims**



1. An apparatus for dispensing individual orders of a hot food product comprising:

storage means for storing a supply of food product to be dispensed and having an outlet;

supply means for transferring an amount of food product corresponding to the size of an individual order from the storage means to mixing chamber means;

mixing chamber means having an inlet at an upper end thereof for receiving food product to be mixed and an outlet at a lower end thereof for dispensing mixed food product;

liquid dispensing means for adding a predetermined amount of liquid to said mixing chamber means to thereby provide a mixed food product;

dispensing means for forcing the mixed food product out of the outlet of said mixing chamber means;

cutting means disposed adjacent the outlet of said mixing chamber means for cutting off a portion of the food product forced out of said mixing chamber means;

heating means for receiving and for heating the cut off food product;

conveyor means including a belt conveyor for removing heated food product from the heating means and for conveying the heated food product towards an outlet of said apparatus; and

control means for controlling the operation of said apparatus.

4,438,684

KINETIC FIREPLACE AND SPIT ROASTER

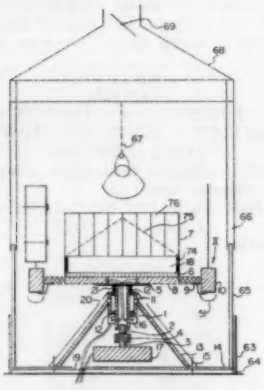
Robert Geissmann, 153 Rue de l'Universite, 75007 Paris, France

Filed Mar. 7, 1980, Ser. No. 128,036

Claims priority, application France, Mar. 15, 1979, 79 06545

Int. Cl.³ A47J *3/704*

U.S. Cl. 99—341 **15 Claims**



1. A kinetic fireplace comprising a tank-like base, a stationary collar supported on said base, and a primary motor mounted below said collar, a hearth formed by a horizontal grate, having upwardly vertical bars and downwardly extending carrying legs, said legs resting on a horizontal carrying plate having a depending central axle rotatably held in said stationary collar, the lower end of said axle being coupled to said primary motor for rotation about its central axis, a plurality of spaced telescoping columns secured at their lower ends to said base, a hood supported by the upper end of said columns, and panels located between the columns surrounding said hearth, said panels being at least, in part, removable to permit access to said hearth, a plurality of tubular arms secured beneath the horizontal grate and extending radially outward toward said telescoping columns, each of said arms having a slide extension at the end of which a cylinder is mounted provided with a spit, and a secondary motor for rotating each of said spits about an axis radially spaced from said central axle.

4,438,685

WAFER BAKING OVEN

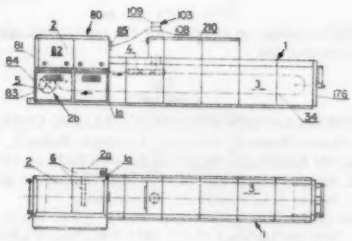
Franz Haas, Sr., Gerstlgasse 25, A-1210 Wien; Franz Haas, Jr., Kreuzgasse, A-2100 Leobendorf, and Johann Haas, Seitweg 4, A-3400 Klosterneuburg, all of Austria

Filed May 11, 1982, Ser. No. 376,954

Claims priority, application Austria, May 11, 1981, 2093/81

Int. Cl.³ A47J *37/00*

U.S. Cl. 99—342 **152 Claims**



1. A wafer baking oven for making, from batter, baked wafers such as flat wafers, low hollow wafers, sugar cones, wafer cups, wafer figures and the like, the baking oven comprising:

a baking chamber having the general shape of an elongated parallelepiped, the baking chamber having a front end and a rear end, the baking chamber having a plurality of heating elements therein;

an enclosure which is at least partially equipped with thermal insulation, at least part of the insulated enclosure enclosing at least part of the baking chamber;

a front port adjoining the baking chamber at the front end of the baking chamber;

a plurality of baking tongs in the baking chamber, the baking tongs being movable through the baking chamber and into and out of the front port in a running direction, the baking tongs being openable when in the front port for the removal of baked wafers therefrom and for charging the baking tongs with batter, the baking tongs also being closeable into a closed state after being charged with batter in the front port and being movable through the baking chamber in the closed state;

the front port including a charging station for charging the baking tongs with batter, and a discharge station for discharging baked wafers along a path;

the baking chamber having two lateral sides, a bottom side and a top side, which sides extend generally between the front and rear ends of the baking chamber, the baking chamber also having a rear side at its rear end;

the insulated enclosure including a pair of lateral walls defining the lateral sides of the baking chamber, a ceiling wall defining the top side of the baking chamber, and a rear wall defining the rear side of the baking chamber;

the baking chamber having a baking chamber exhaust for exhausting gases from the baking chamber;

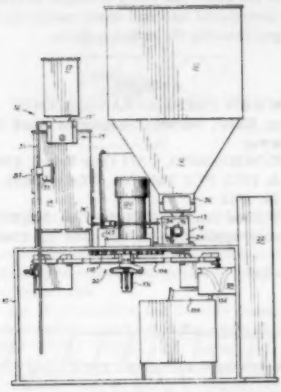
the insulated enclosure substantially completely enclosing at least the baking chamber on its two lateral sides, on its ceiling walls and at its rear wall, with the exception of the baking chamber exhaust;

the baking chamber also being substantially completely enclosed at its bottom side.

4,438,686
APPARATUS FOR MIXING A COMMINUTED FOOD MATERIAL AND A LIQUID

Simon A. Perez, Tucson, Ariz., assignor to Innovatec, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 342,881, Jan. 28, 1982, abandoned. This application Jul. 9, 1982, Ser. No. 395,504
Int. Cl.³ A47J 27/00; B67D 5/52
U.S. Cl. 99—353 35 Claims



1. An apparatus for mixing a comminuted food material and a liquid comprising:

(a) a reservoir for storing therein a supply of said liquid and having a liquid discharge opening for flow of said liquid therethrough,

(b) a hopper for storing therein a supply of said comminuted food material and having a material discharge opening for flow of said food material therethrough,

(c) means associated with said liquid discharge opening of said reservoir for selectively dispensing said liquid in discrete measured quantities,

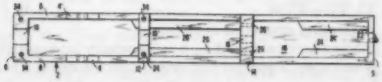
(d) means associated with said material discharge opening of said hopper for selectively dispensing said food material in discrete measured quantities, and

(e) control means for actuating simultaneously said liquid dispensing means and said food material dispensing means respectively to dispense sequentially respective predetermined pluralities of said discrete measured quantities of said liquid and said food material into receptacle means thereby to thoroughly mix respective predetermined total quantities of said liquid and said food material.

4,438,687
TRIPHAMMER NUTCRACKER

Fred A. McNiel, 611 Bouldin Ave., Austin, Tex. 78074

Filed Aug. 2, 1982, Ser. No. 404,001
Int. Cl.³ A23N 5/00
U.S. Cl. 99—571 23 Claims



1. A triphammer nutcracker comprising:

a base;

a mortar and pestle slideably carried on said base for rectilinear motion with respect to each other, said mortar and said pestle being spaced from each other to define a cracking chamber and each having a recess in a face portion, said recesses cooperating to receive and hold a nut to be cracked in said cracking chamber between said mortar and said pestle;

a triphammer having a hammer head which is spring biased toward said pestle and which forcibly contacts said pestle to effect cracking of the nut positioned in said cracking chamber, said hammer head being slideably carried on said base for movement toward and away from said pestle;

a slideable cracking chamber shield telescopingly surrounding said mortar and being slideable with respect thereto to enclose said cracking chamber during cracking of the nut;

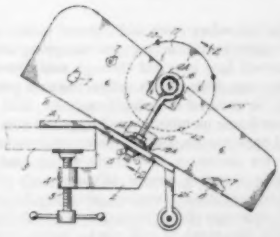
an operating lever having means to retract said hammer head away from said pestle and to release said hammer head to cause said hammer head to forcibly contact said pestle, and means to reciprocate said mortar and said shield to hold the nut and to enclose said cracking chamber during cracking of the nut; and

means to adjust said spring bias of said triphammer and means to adjust the distance of travel of said pestle in said base to regulate the cracking force applied to the nut by said pestle.

4,438,688
NUTCRACKER

Paul E. Johnson, 4123 Jasper Rd., Springfield, Oreg. 97477

Filed Mar. 7, 1983, Ser. No. 473,127
Int. Cl.³ A23N 5/00
U.S. Cl. 99—574 4 Claims



1. A nutcracker for temporary attachment to a supporting surface during use and comprising in combination,

a base including a clamping member adapted for engagement with a supporting surface, said base having an angulated portion,

a U-shape chute having an inclined bottom wall in place on said base, a portion of said chute constituting a receptacle to receive uncracked nuts,

bearing posts in place on said base with each post terminating upwardly in an eye, mounting means coacting on said base and said posts and adjustably mounting each of said posts relative said chute bottom wall,

a drum rotatably carried within the eyes of said bearing posts and transversely disposed in said chute so as to locate a portion of the drum periphery adjacent said chute bottom wall whereby the drum and said bottom wall may coact to crack a nut therebetween, and

means for imparting rotation to said drum.

4,438,689
MATERIAL BALING DEVICE

Emil Simich, Chicago, Ill., assignor to A. J. Gerrard & Co., Des Plaines, Ill.

Filed May 10, 1982, Ser. No. 376,266
Int. Cl.³ B65B 13/04
U.S. Cl. 100—25 8 Claims

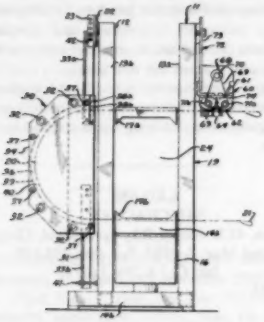
1. A baling apparatus for use with bale strapping material including in combination:

a first press means and a second press means, each of said

press means including a plurality of channel means extending across said press means;

a return chute assembly having a frame,

a plurality of chute means, each chute means supported on said frame in juxtaposition to said first and second press means, said chute means having a curved face and two sidewalls, said curved face extending radially outward from said first and second press means, said sidewalls extending radially inward from the outer edges of said curved face, said chute means adapted to be aligned in communication with respective channel means of said first and second press means to slideably receive bale strapping



material extending from said channel means of one of said press means and directing said strapping material along said curved face into and through said channel means of said opposite press means where the bale strapping material can be secured onto itself; and

at least one frame member extending parallel to said first and second press means, said frame member including support means for receiving said chute means and including a releasable securing means affixing each of said chute means to said frame member, allowing for movement of said chute means along the length of said frame member to facilitate alignment of said chute means with said channels.

4,438,690

PNEUMATICALLY OPERATED PRESS

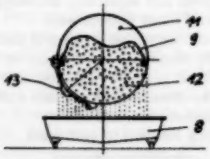
Wilhelm von Allworden, Erbach, Fed. Rep. of Germany, assignor to Howard Machinery Limited, Harleston, England

Filed Feb. 10, 1982, Ser. No. 347,555

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105049

Int. Cl.³ B30B *5/02, 9/22*

U.S. Cl. 100—116 **7 Claims**



1. A pneumatically operated press comprising,

a rotatable drum having its axis of rotation disposed horizontally,

a flexible membrane attached to the wall of the drum internally thereof and extending parallel to said axis of rotation so as to sub-divide the interior of the drum into two spaces, a pressing space and an air space,

the pressing space being defined by said membrane and a portion of said wall, and said wall portion having a filling opening through which material to be pressed is introduced into the pressing space,

a closure member for the filling opening which is located adjacent the attachment of the membrane to said wall,

the portion of the drum defining the pressing space, including the closure member, being perforated over its entire curved area between the attachments of the membrane to the drum,

the air space being defined by said membrane and a further portion of the drum and being arranged so that air under pressure introduced into said space causes the membrane to be urged towards the pressing space.

4,438,691

SCREW PRESS ARRANGEMENTS

Per I. Solberg, Rådal, Norway, assignor to Stord Bartz A/S, Bergen, Norway

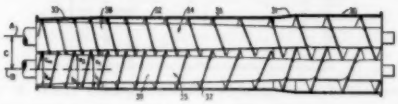
PCT No. PCT/NO81/00023, § 371 Date Feb. 3, 1982, § 102(e) Date Feb. 3, 1982, PCT Pub. No. WO81/03639, PCT Pub. Date Dec. 24, 1981

PCT Filed Jun. 11, 1981, Ser. No. 345,379

Claims priority, application Norway, Jun. 13, 1980, 801755

Int. Cl.³ B30B *9/12*

U.S. Cl. 100—117 **10 Claims**



1. A screw press comprising a press basket having a first cylindrical portion at a feed end, a second following tapered portion, a third following cylindrical portion and a fourth following tapered portion at a discharge end; and

a pair of screw elements extending through said basket from said feed end to said discharge end in side-by-side relation on parallel longitudinal axes, each said screw element having a core and a screw thread extending from said core, each said core having a minimum diameter within said first basket portion, a greatly increasing diameter in the direction of said discharge end within said second basket portion and a first part of said third basket portion, and a greatly increasing diameter in the direction of said discharge end within said fourth basket portion.

4,438,692

PRINTING APPARATUS WITH COOLING OF HAMMER PRINTING COILS

Michio Yanadori, Hachioji; Yuji Hosoda; Isao Nakajima, both of Ibaraki; Kenichi Igarashi; Makoto Kurosawa, both of Katsuta; Kensei Hosoya, Ibaraki, and Tsuneki Kobayashi, Mito, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 318,120, Nov. 4, 1981, abandoned. This application Jun. 20, 1983, Ser. No. 506,067

Claims priority, application Japan, Nov. 7, 1980, 55-155973

Int. Cl.³ B41J *3/00;* **H01F** *5/00*

U.S. Cl. 101—93.04 **10 Claims**

1. A printing apparatus comprising:

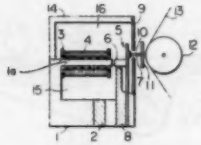
a printing section including a substantially horizontally disposed core, a plurality of drive coils for driving printing hammers arranged longitudinally in a side-by-side relationship at one side of the core, said drive coils being arranged in a side-by-side relationship adjacent to and in contact with one another so as to form a block having a pair of opposite surfaces to be cooled;

a support means for supporting the printing section;

a first cooling fluid passageway defined between one side of said core and one of said pair of opposite surfaces of said

drive coils to allow a cooling fluid for the drive coils to flow therethrough, said first cooling fluid passageway having a substantially constant cross-sectional area in a flow direction of a cooling fluid and extending substantially straight in a direction in which the drive coils are arranged;

a second cooling fluid passageway defined between the other of said pair of opposite surfaces of said drive coils and a cover member to allow the cooling fluid for the



drive coils to flow therethrough, said second cooling fluid passageway being substantially constant in cross-sectional area in a direction of the flow of the cooling fluid and substantially straight in a direction in which the drive coils are arranged; and

at least one fluid machine for forcibly causing the cooling fluid to flow through said first cooling fluid passageway and said second cooling fluid passageway whereby the cooling fluid flows along said opposite surfaces to be cooled of the block of said drive coils.

4,438,693

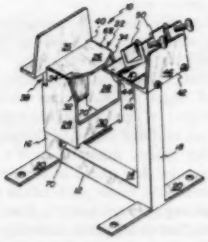
SILK SCREEN PRINTING ONTO THE FRONT PANEL OF A CAP

Russell A. Serrianne, and Roger L. Jennings, both of Glens Falls, N.Y., assignors to R. Jennings Manufacturing Company, Inc., Fort Ann, N.Y.

Filed Nov. 15, 1982, Ser. No. 441,672

Int. Cl.³ B41M *1/12*; B41F *17/08*

U.S. Cl. 101—129 **10 Claims**



1. A cap printing device for silk screen printing into the front panel of a cap of the type having a sweatband and a bill comprising:

a frame member;

a saddle secured to the frame member for mounting the cap for printing, said saddle having a flat platen which supports the front panel of the cap when the cap is so mounted;

a registration plate against which the bill of the cap presses when the cap is mounted on the saddle, said registration plate being secured to the frame in a spaced-apart perpendicular relationship with the platen, the space between the registration plate and the platen defining a channel for receiving the sweatband of the cap; and

a means for movably securing a silk screen to the frame for movement between an advanced position wherein the silk screen contacts the front panel of a cap mounted on the saddle and a retracted position wherein the silk screen is withdrawn for changing caps.

4,438,694

GRAVURE COLOR PRINTING PRESS

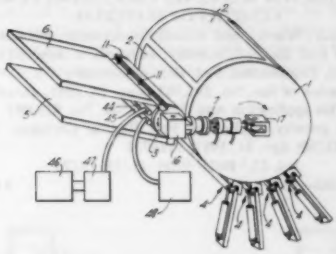
David W. Parkins, Bedford; David K. Thomas, Leighton Buzzard; Peter C. Pugsley, Pinner, and Benjamin J. Price, Haywards Heath, all of England, assignors to Crosfield Electronics Limited, London, England

Filed Sep. 1, 1981, Ser. No. 298,407

Claims priority, application United Kingdom, Sep. 3, 1980, 8028364

Int. Cl.³ B41F *5/18*

U.S. Cl. 101—152 **2 Claims**



1. A gravure color printing press, comprising:

a printing cylinder;

four printing members (2) each for a different color arranged around said printing cylinder;

an impression cylinder (3);

means for holding a sheet of substrate (15) to be printed on said impression cylinder;

four inking assemblies (4), each of said inking assemblies including a doctor blade (35) movable towards and away from said printing cylinder, each of said inking assemblies including an ink channel (31) upstream of its doctor blade and including a pivoted blade (32), said pivoted blade seating against said doctor blade to close said ink channel and cut off a supply of ink to said printing member;

means (7) for moving said impression cylinder towards and away from said printing cylinder, said moving means comprising fluid pressure operated piston and cylinder assemblies (23) and spring means (26) connected together in series and acting between said impression cylinder and said printing cylinder, said spring means defining a final printing pressure between said impression cylinder and said printing cylinder;

an ink dryer and cooler, said ink dryer and cooler comprising an upstream duct (44) and a downstream duct (45) which extend along said impression cylinder, means (46, 47) to supply hot air to said upstream duct, and means (48) to supply cold air to said downstream duct; and

a control system means (49–59) for controlling the operation of each of the inking assemblies so that each of said inking assemblies only supplies ink to its corresponding printing member and each of said doctor blades contacts only its corresponding printing member, said control system means controlling said means for holding a sheet of substrate so that the substrate is held in a fixed position on said impression cylinder until said substrate has been contacted and printed by all of said different color printing members, said control system means controlling a rotation of said impression cylinder and said printing cylinder so that said impression cylinder continues to rotate in step with said printing cylinder when said means for moving said impression cylinder has moved said impression cylinder away from said printing cylinder whereby ink on said

substrate held on said impression cylinder is allowed to dry before said impression cylinder and said printing cylinder are once again brought together to print the next color onto said substrate, said inking assemblies always contacting their corresponding printing member once during each revolution of said printing cylinder.

4,438,695

CYLINDER FOR MACHINES PROCESSING RUNNING LENGTHS OF MATERIAL

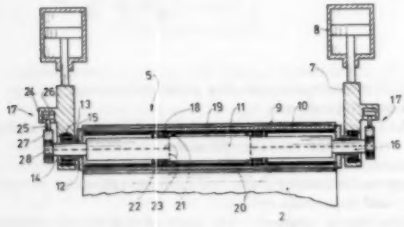
Peter Maier, Worms, and Arnold Niedermaier, Beindersheim, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 292,782, Aug. 14, 1981, abandoned. This application Aug. 3, 1983, Ser. No. 519,891

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033230; Apr. 11, 1981, 3114731

Int. Cl.³ B41F *9/06, 13/18, 13/20*

U.S. Cl. 101—153 **9 Claims**



1. An impression cylinder for a printing machine having an impression and an etched cylinder, said impression cylinder including:

(a) a cylindrical outer casing supported at its ends on said machine by first adjustable support means including self-aligning bearings,

(b) a cylindrical core coaxially disposed in said outer casing and supported therein by at least one support bearing disposed symmetrically with respect to the center of said outer casing, the ends of said cylindrical core extending beyond the ends of said outer casing,

(c) second adjustable support means engaging the ends of said cylindrical core which are supported on said first support means for separate independent adjustment, said second adjustable support means permitting radial adjustment of said cylindrical core independent of said outer casing,

(d) an annular oil receiving chamber defined between said cylindrical core and said cylindrical outer casing partially filled with oil, said chamber being open with respect to said support bearing supporting said cylindrical core within said outer casing, and

(e) at least one strip-off device associated with each support bearing, supporting said core within said outer casing, disposed laterally therefrom and secured to said core extending radially toward said outer casing to strip the oil therefrom during operation and direct the oil toward said support bearing, said strip-off device including an angled segment disposed symmetrically with respect to the cylindrical outer casing axis, the apex thereof directed toward the associated support bearing, said angled segment being contoured to said outer casing and said cylindrical core.

4,438,696

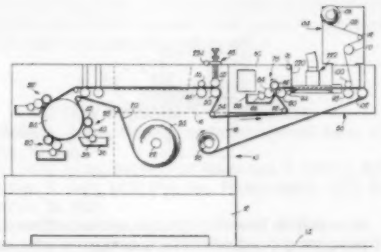
MULTI-PURPOSE FLEXOGRAPHIC PRESS MODULE

John W. George, Meriden, and Eugene D. Rudolph, Topeka, both of Kans., assignors to Express Card & Label Co., Topeka, Kans.

Filed Mar. 15, 1982, Ser. No. 358,116

Int. Cl.³ B41F *5/06, 5/18*

U.S. Cl. 101—180 **9 Claims**



1. For use in combination with a flexographic web printing press having a pair of upstanding frame plates provided with flat end edges, a series of print stations including parallel driven rolls spanning said frame plates and journalled thereby, and means for driving a web through said stations, in timed relation to rotation of said rolls, an add-on, flexographic module comprising:

a chassis including a pair of parallel, laterally spaced apart side plates;

a print station carried by said chassis and including a plurality of parallel rolls spanning said side plates and journalled thereby;

web guide rolls on said chassis between said side plates in parallel relationship with the rolls of said print station of the module in disposition to receive, and return to, a web from said driving means of the press when the module is attached thereto;

means for detachably suspending said module from said frame plates of the press in such a manner that said rolls of the module are maintained in parallel relationship with said rolls of the press; and

mechanism for releasably, drivingly connecting rolls of the module in timed relationship with rolls of the press when the module is attached to the press,

said side plates having flat end edges disposed for abutment against said end edges of said frame plates and being provided with a pair of opposed guide plates projecting outwardly beyond said end edges of the side plates, said guide plates being spaced apart by such a distance less than that between the side plates as to permit the guide plates to slip between the frame plates of the press and into surface-to-surface engagement with the frame plates when the module is attached to the press, said suspending means including structure for releasably holding said end edges of the module side plates in abutting relationship with the end edges of the frame plates.

4,438,697

ROTARY SHEET PRINTING MACHINE

Herbert Doliner, Niederau, German Democratic Rep., assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jun. 1, 1982, Ser. No. 384,166

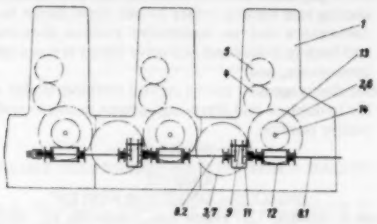
Claims priority, application German Democratic Rep., Jun. 24, 1981, 231096

Int. Cl.³ B41F *7/06, 13/00*

U.S. Cl. 101—183 **6 Claims**

1. A rotary sheet-printing machine, comprising a plurality of printing mechanisms arranged successively in a longitudinal direction and each having a rotatable cylinder; rotary main

drive means providing a predetermined power and having a rotatable main drive shaft extending through said printing mechanisms; and transmission means for transmitting rotation from said rotary drive means to said cylinders of said printing mechanisms, said transmission means including a planetary



transmission for each of said printing mechanisms and having a planetary gear carrier, a hollow worm member driven by said shaft and fixedly connected with said planetary carrier so that said shaft extends through said worm member, and a worm gear connected with said cylinder without intermediate gear means and engaging with said worm member.

4,438,698

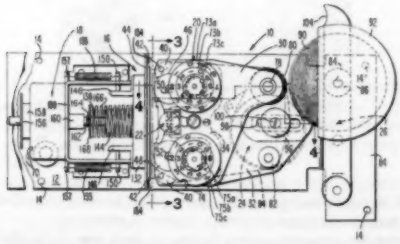
ENDORSING APPARATUS UTILIZING HOLDING FORCE PRESSURE

John L. Sullivan, Jr., Fort Lauderdale; Robert D. Pearson, Pompano Beach, and Donald A. Youngblood, Fort Lauderdale, all of Fla., assignors to Burroughs Corporation, Orlando, Fla.

Continuation of Ser. No. 416,650, Sep. 10, 1982, abandoned, which is a continuation of Ser. No. 182,600, Aug. 29, 1980, abandoned. This application Jul. 5, 1983, Ser. No. 510,741

Int. Cl.³ B41F *1/00*

U.S. Cl. 101—287 **8 Claims**



1. Holding force pressure type endorsing apparatus for use with document processing equipment wherein individual items, such for example as checks or documents, may be printed upon the obverse or reverse side thereof depending upon the application requirement, and wherein the complete endorsing assemblage is demountably removable from its associated apparatus for replacement, repair, adjustment and/or service as required, comprising a supporting base,

print producing means demountable, removable, cantilvered to said base;

signal controlled impact gimbal mounted platen means disposed adjacent to said print producing means and capable of deflecting in directions at right angles to one another and forming together with said print producing means an item receiving passageway into and through which an item/document may be moved for receiving a printed legend or other such information thereon from said print producing means;

drive means for moving an inking member through said item passageway between said impact producing platen means and said print producing means for effecting printing on an item interposed into said passageway;

means for applying fresh ink to said inking member as the ink is depleted therefrom as a result of the printing operation;

incremental, signal controlled holding force pressure drive means for said print producing means for advancing said print producing means in response to an applied signal representing sequential data desired to be printed upon each successive item, and for pressing said platen into said item momentarily stopping said item and means providing an adjustable legend mount operably associated with said print producing means for simultaneously applying additional fixed content printed information to said item as the item is stopped within said passageway;

said legend mount being vertically, slidably, demountably captivated in said base and including means for horizontally displacing said mount relative to said item passageway and for snap out dismounting from said base for changing or renewing the data carried thereon.

4,438,699

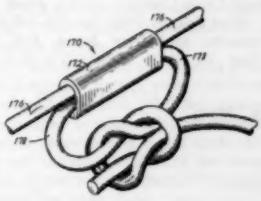
METHOD FOR REMOTE POSITIONING OF EXPLOSIVE CHARGES IN MINING VOIDS

Leonard R. Nitzberg, Knoxville, Tenn., assignor to Patent Development Ltd., Knoxville, Tenn.

Filed Oct. 6, 1980, Ser. No. 193,927

Int. Cl.³ F42B *3/00*

U.S. Cl. 102—313 **10 Claims**



1. A method of remotely positioning explosive charges at preselected locations in substantially horizontal voids created by mining in a vein of ore, each of said voids commencing at an entry proximate the cropping of said vein and continuing inwardly, said method comprising the steps of:

placing an initial charge proximate the entry of said void,

arming said initial charge by attaching a blasting trunk line to said charge,

releasably engaging said initial charge with a loading means,

moving said initial armed charge along the length of said void until said charge is positioned at a first of said preselected locations within said void,

depositing said initial charge with said blasting trunk line attached thereto at said first preselected location within said void,

arming a further charge by slidably attaching a detonator cord of said further charge to said blasting trunk line,

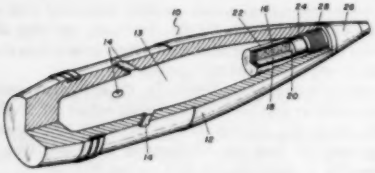
releasably engaging said further charge, and

moving said further armed charge along the length of said void until said further charge is positioned at a further of said preselected locations within said void spaced from said initial charge, said further charge being positioned closer to said void entry than said initial charge.

4,438,700
WHITE SMOKE SPOTTING COMPOSITION FOR TRAINING AMMUNITION

Charles A. Knapp, Wayne, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 19, 1982, Ser. No. 399,601
Int. Cl.³ F42B *13/44*; C06B *33/12*
U.S. Cl. 102—334 **7 Claims**



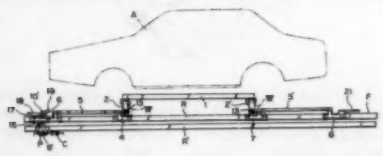
1. A pyrotechnic spotting composition consisting essentially of 30–50% zinc powder, 10–30% aluminum powder, 10–30% potassium nitrate or sodium nitrate, and 10–30% potassium perchlorate.

6. In an artillery training projectile shell having a hollow core, a smoke producing means activated upon pact disposed in said hollow core, and openings in the aft portion of said shell for exiting smoke produced from said smoke producing means, the improvement wherein the smoke producing means includes a composition consisting essentially of 30–50% zinc powder, 10–30% aluminum powder, 10–30% potassium nitrate or sodium nitrate, and 10–30% potassium perchlorate.

4,438,701
TRUCK CONVEYOR

Masasumi Murai; Hirokazu Kondo, both of Tokorozawa, and Shigekatsu Takino, Hanno, all of Japan, assignors to Tsubakimoto Chain Company, Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,671
Claims priority, application Japan, Feb. 20, 1981, 56-22078[U]; Feb. 25, 1981, 56-24486[U]; Feb. 27, 1981, 56-26164[U]
Int. Cl.³ B61B *10/04*
U.S. Cl. 104—172 B **7 Claims**

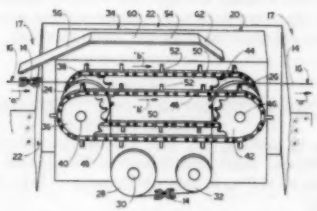


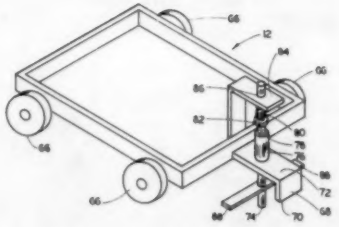
1. A truck conveyor comprising:
a leading trolley;
a front trolley;
means connecting said leading trolley with said front trolley;
a rear trolley;
a rearmost trolley;
means connecting said rear trolley with said rearmost trolley;
a trolley rail for engaging and guiding said leading, front, rear and rearmost trolleys along a conveyance path;
an article carrier for receiving articles for conveyance having first trolley-engagement means at the front of said article carrier for detachably engaging said front trolley and second trolley-engagement means at the rear of said article carrier for detachably engaging said rear trolley;
said first and second trolley engagement means respectively comprising front and rear channeled engaging members having vertically oriented web portions and upper and lower horizontally disposed flanges defining for each engaging member a sideward opening and a]-shaped cross section;
drive means for conveying said article carrier and said leading, front, rear and rearmost trolleys along said trolley rail;
drive-engagement means having an operative position connecting said leading trolley to said drive means to effect conveyance and an inoperative position disconnecting said leading trolley and said drive means to inactivate said conveyance; and
drive disengagement means on said rearmost trolley operable to displace said drive-engagement means to said inoperative position.

4,438,702
ENDLESS CONVEYOR SYSTEM

Arthur B. Rhodes, 7227 Helen Ave., Louisville, Ky. 40258

Filed Jun. 30, 1982, Ser. No. 393,754
Int. Cl.³ B61B *10/00*
U.S. Cl. 104—172 B **15 Claims**





1. A conveyor system for moving load bearing units along a path defined by the conveyor system, comprising:
endless conveyor means having at least one flight thereof defining the path to be traveled by the load bearing units, said at least one path defining flight having a discontinuity along the defined path;
an endless conveyor transfer device disposed across the discontinuity in said at least one path defining flight of said endless conveyor device;
fixed position engagement means attached to each of the load bearing units said engagement means being adapted to engage said endless conveyor transfer device for movement of the load bearing units with said endless conveyor transfer device across the discontinuity;
moveable pin means attached to each of the load bearing units, said pin means being movable between an endless conveyor device engaged position, in which engaged position the load bearing units are connected to said at least one path defining flight of said endless conveyor means for movement therewith along the defined path, and an endless conveyor means disengaged position; and
means for activating said movable pin means to the endless

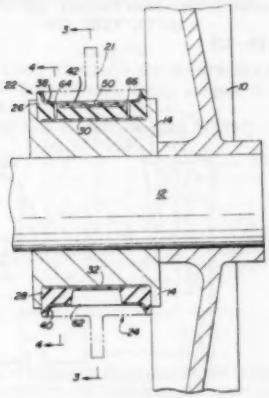
conveyor means disengaged position proximate the upstream end of the discontinuity as said engagement means engages said endless conveyor transfer device and for actuating said moveable pin means to the endless conveyor means engaged position proximate the downstream end of the discontinuity as said engagement means disengages said endless conveyor transfer device.

4,438,703

PRIMARY SUSPENSION SYSTEM FOR A RAILWAY CAR

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Feb. 12, 1982, Ser. No. 348,446
Int. Cl.³ B61F *5/26*
U.S. Cl. 105—224.1 **5 Claims**



1. In a railway truck having a side frame for receiving a wheel-axle unit disposed to ride in a journal bearing,

a primary suspension system clamped to said side frame between said journal bearing and said side frame comprising:

(a) top and bottom assemblies forming a ring disposed to fit around said journal bearing to minimize forces transmitted from said wheel-axle unit to said side frame;

(b) said top and bottom assemblies each including elastomeric members bonded to pairs of inner and outer plate members;

(c) said outer plate members including primary and secondary plate elements;

(d) said primary plate elements having openings therein;

(e) said elastomeric members having recessed portions on their outer peripheries aligned with the openings of said primary plate elements;

(f) said secondary plate elements being disposed in said recessed portions of said elastomeric members in different planes than primary plate elements;

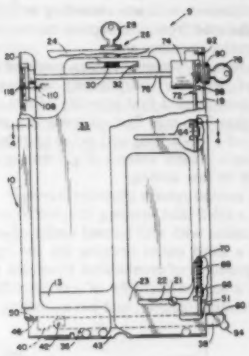
whereby said suspension system provides a first spring rate up to a predetermined loading of said elastomeric members when said outer secondary plate elements are inoperative and a second higher spring rate when said secondary metal plate elements become operative when some of said elastomeric members are compressed beyond predetermined limits during high load forces.

4,438,704

CASSETTE FOR CURRENCY NOTES OR OTHER VALUABLE ARTICLES

Alfred J. Hutcheon, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 14, 1980, Ser. No. 207,496
Claims priority, application United Kingdom, Jul. 14, 1980, 8022942
Int. Cl.³ G08B *13/06*
U.S. Cl. 109—44 **8 Claims**



1. Apparatus for storing items to be dispensed comprising:

a receptacle for storing said items;

locking mechanism for locking said receptacle in a closed condition to prevent access to said items and also for unlocking said receptacle so as to permit access to said items; and

means for indicating tampering being operatively coupled with said locking mechanism for giving an indication that a cycle including an unlocking of said receptacle followed by a locking of said receptacle has occurred after a said cycle has in fact occurred;

said tampering indicating means including a latch mechanism which is settable to a first state prior to an unlocking operation of said receptacle, said latch mechanism being operatively coupled to said locking mechanism so as to be set to a second state during a said cycle including said unlocking and locking operation of said receptacle, said second state of said latch mechanism being an indication that said cycle has taken place;

said receptacle having a removeable and lockable cover which is separate from said locking mechanism, said cover providing access to said latch mechanism to enable said latch mechanism to be set to said first state and said cover also facilitating the loading of said receptacle with said items to be dispensed.

4,438,705

INCINERATOR WITH TWO REBURN STAGES, AND, OPTIONALLY, HEAT RECOVERY

John N. Basic, Sr., 41 W. 202 Whitney Rd., St. Charles, Ill. 60174

Filed Mar. 27, 1981, Ser. No. 248,054
Int. Cl.³ B09B *3/00*
U.S. Cl. 110—235 **249 Claims**

1. An incinerator system for bulk refuse and hydrocarbon-containing liquids comprising:

(A) an enclosed main combustion chamber having:

(1) a first inlet opening for the introduction of solid bulk refuse; and

(2) a first outlet opening for the egress of the gaseous products of combustion from said main combustion chamber;

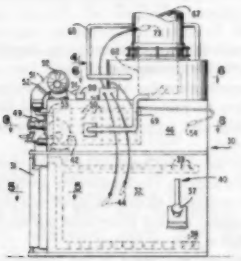
(B) a first reburn chamber having:
(1) a second inlet opening coupled to and in fluid communication with said first outlet opening;
(2) a second outlet opening for the egress of the gaseous products of combustion from said first chamber;
(3) burner means, located in proximity to said second inlet opening, for burning a fuel in said first chamber, said burner means having a high and a low setting and, when in its high setting, burning more fuel than when in its low setting;
(4) a first plurality of jets extending into said first reburn chamber, said jets extending at least about half of the distance from said second inlet opening to said second outlet opening; and
(5) first oxygenating means, coupled to said first plurality of jets, for introducing an oxygen-containing gas through said first plurality of jets into said first reburn chamber, said first oxygenating means having a high and a low setting and, when in its high setting, introducing a greater volume of gas through said jets than when in its low setting;
(C) a second reburn chamber having:
(1) a third inlet opening coupled to and in fluid communication with said second outlet opening;
(2) a third outlet opening for the egress of the gaseous products of combustion from said second chamber,
(3) a second plurality of jets extending into said second reburn chamber, said jets extending at least about half of the distance from said third inlet opening to said third outlet opening; and
(4) second oxygenating means, coupled to said second plurality of jets, for introducing an oxygen-containing gas through said second plurality of jets into said second chamber, said second oxygenating means having a high and a low setting and, when in its high setting, introducing a greater volume of gas through said second plurality of jets than when in its low setting;
(D) first sensing means, located in proximity to said first reburn chamber, for determining a temperature within said first reburn chamber;
(E) first control means, coupled to said first oxygenating means and to said first sensing means, for, when the temperature determined by said first sensing means is above a first predetermined set point, placing said first oxygenating means in its high setting and, when the temperature determined by said first sensing means is below said first set point, placing said first oxygenating means in its low setting;
(F) second sensing means, located in proximity to said first reburn chamber, for determining a temperature within said first reburn chamber;
(G) second control means, coupled to said burner means and to said second sensing means, for, when the temperature determined by said second sensing means is above a second predetermined set point, placing said burner means in its low setting and, when the temperature determined by said second sensing means is below a third predetermined set point which is not higher than said second set point, placing said burner means in its high setting;
(H) third sensing means, located in proximity to said second reburn chamber, for determining a temperature within said second reburn chamber; and
(I) third control means, coupled to said third sensing means and to said second oxygenating means, for, when the temperature determined by said third sensing means is above a fourth predetermined set point, placing said second oxygenating means in its high setting and, when the temperature determined by said third sensing means is below said fourth set point, placing said second oxygenating means in its low setting.

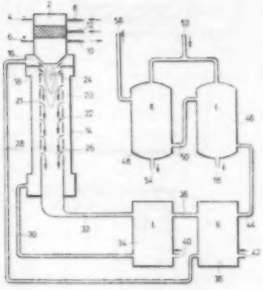
4,438,706

PROCEDURE AND EQUIPMENT FOR DESTROYING WASTE BY PLASMA TECHNIQUE

Otto Boday; Andras Herpay; Ferenc Krajcsovics; Istvan Neveri; Sandor Pete; Ferenc Pocsy; Bela Szikora, and Endre Szirmai, all of Budapest, Hungary, assignors to Villamosipari Kutato Intezet, Budapest, Hungary

Filed Feb. 19, 1982, Ser. No. 350,397
Claims priority, application Hungary, Feb. 27, 1982, 485/81
Int. Cl.³ F23G *7/04*
U.S. Cl. 110—238 **6 Claims**





1. Process for destroying fluid waste containing vaporizable organic materials comprising the steps of:
(a) producing air plasma using D.C. energy supply generator;
(b) transferring said plasma into a plasma torch at one end of a plasma reactor;
(c) introducing organic waste vapor and preheated oxygen into said torch for interaction with said plasma; and
(d) discharging end products of said interaction from the end of said plasma reactor, opposite to the location of said torch, into gas washing equipment.

4,438,707

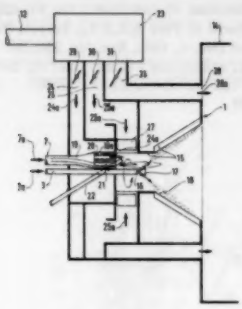
APPARATUS FOR DIRECTLY IGNITING LOW-GRADE SOLID FUEL POWDERS IN COLD COMBUSTION CHAMBERS

Lucien Delaplace, Sevres, and Jacques Robert, Meudon, both of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Feb. 8, 1982, Ser. No. 346,708
Claims priority, application France, Feb. 6, 1981, 81 02383
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—264 **10 Claims**

1. Ignition apparatus for directly igniting low-grade solid fuel powders in cold combustion chambers, said apparatus comprising at least one pilot burner with at least one pilot igniter and at least one main igniter, said at least one main

igniter being fed with low-grade fuel powders, the improvement comprising:



means for feeding said pilot igniter with low-grade gas from a gasifying unit gasifying said low-grade fuel powders to eliminate adding any auxiliary high-grade fuel.

4,438,708

COMPLETE INCINERATION OF WASTE MATERIAL

Russell E. Duff, Solana Beach, Calif., assignor to S-Cubed, LaJolla, Calif.

Filed Aug. 13, 1982, Ser. No. 407,787
Int. Cl.³ F23G 9/00
U.S. Cl. 110—346 **13 Claims**

10. A method of disposing of waste material comprising
providing a container and depositing the waste material in said container,
supplying liquid oxygen to said container in excess of the estimated amount required to completely oxidize the organic and metallic components of the waste material,
submerging said container in the ocean so that said wastes and liquid oxygen are contained in an unvented underwater combustion site, and
igniting said waste material to create a rapid combustion, whereupon substantially all of the waste material is converted to ash and volatile combustion products, said container ruptures, the ash and ruptured container sink to the ocean floor and the volatile combustion products rise through the seawater, condensing within the seawater or reacting with chemicals in the seawater so that only relatively harmless volatile products reach the ocean surface.

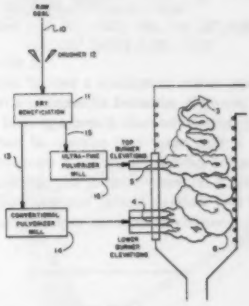
4,438,709

SYSTEM AND METHOD FOR FIRING COAL HAVING A SIGNIFICANT MINERAL CONTENT

Richard W. Borio, Somers; Hugh W. Nelson, West Hartford, both of Conn., and Arun K. Mehta, Los Altos, Calif., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 27, 1982, Ser. No. 423,591
Int. Cl.³ F23K 1/00; F23D 1/00
U.S. Cl. 110—347 **5 Claims**

1. A combustion system for mineralized coal, including,
a source of coal having a significant content of iron pyrite (FeS_2) in its total mineral fraction,
a classifier (beneficiator) connected to the source of coal to receive and divide the coal into a first stream of substantially pure coal and into a second stream of coal with a highly concentrated content of iron pyrite and other minerals,
a furnace having two sets of burners arranged vertically one over the other,
means connected between the classifier and the lower of the two sets of burners to receive and pulverize the first stream of coal supplied the burners,
and means connected between the classifier and the upper of the two sets of burners to receive and pulverize the second stream of coal to an extremely small size (≦400 mesh) and supplied the burners,
whereby the combustion generated by the coal of the first set of burners extends up through the furnace so that the coal of the second set of burners ejects into the hot temperatures and air-richer zone of the combustion and thereby roasts the iron pyrites to iron oxide.



4. A process for burning highly mineralized coal, including,
dividing raw coal with a high mineral content into a first stream of relatively low mineral content and a second stream of relatively high mineral content including pyrites,
pulverizing the first stream of coal to a conventional size for combustion in a furnace,
supplying the first stream of pulverized coal to a combustion zone in the lower portion of a furnace,
pulverizing the second stream of mineralized coal to an extremely fine size,
and supplying the second stream of finely pulverized mineralized coal to the high-temperature upper portion of the combustion zone in the furnace,
whereby the pyrites of the mineral is roasted to Fe_2O_3 and/or Fe_3O_4 and all of the mineral content is prevented from forming slag in the furnace.

4,438,710

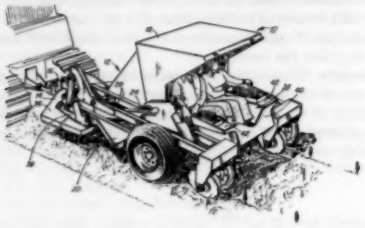
SEEDLING PLANTER

Anthony Paladino, Woodstock, Canada, assignor to Timberland Equipment Limited, Woodstock, Canada

Filed Mar. 24, 1982, Ser. No. 361,253
Int. Cl.³ A01C 11/02
U.S. Cl. 111—3 **14 Claims**

1. Apparatus for planting seedlings comprising a main frame; wheel support means for supporting the main frame above the ground; a pair of planting beams each pivotally mounted adjacent to a respective one of the opposing sides of the main frame, each planting beam having a planting dibble adjacent its free outer end; a pair of packing beams each pivotally mounted to the main frame adjacent a respective one of said planting beams and having packing means at their free outer ends for packing earth around seedlings planted by said dibbles, an operators' station disposed on said main frame intermediate the opposing sides of the main frame whereby, in use, operators

located at the operators' station have access to the planting dibbles in their raised positions for placement of seedlings thereinto, means for raising and lowering said planting beams to cause the dibbles carried thereby to move between raised seedling-receiving positions and lowered earth-penetrating positions; and ejecting means carried by the respective planting beams for ejecting individual seedlings out of their planting dibbles into furrows in the soil cut thereby, and wherein said



wheel support means comprises a pair of elongated walking beams each pivotally mounted adjacent to a respective one of the opposing sides of the main frame, a ground engaging wheel attached to a free outer end portion of each said walking beams, a pair of module bases, each connected to the main frame adjacent a respective one of the opposing sides thereof; one each of said walking beams, planting beams and packing means being pivotally connected to a respective one of said module bases.

4,438,711

FUR SEWING MACHINE

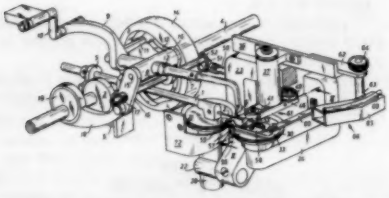
Herbert Dietrich, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Oct. 20, 1982, Ser. No. 435,497

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143051

Int. Cl.³ D05B *15/00, 27/10*

U.S. Cl. 112—16 **11 Claims**



1. A fur sewing machine having a housing and a stitch forming area, comprising: a carrier bracket which is displaceable relative to the housing; two feed discs, one of which being mounted on said carrier bracket, said feed discs being rotatably mounted in a plane; a rod non-rotatably and axially displaceably connected in the housing and connected to said carrier bracket for displacing said carrier bracket horizontally relative to the housing; and a trimming mechanism upstream of the stitch forming area and close above said feed discs, said trimming mechanism comprising a trimming blade mounted for oscillation parallel to the plane of rotation of said feed discs, and a relatively stationary counterblade mounted for engagement with said trimming blade and extending parallel to the plane of rotation of said feed discs.

4,438,712

STITCHING HEAD HAVING TWO INDEPENDENT PRESSER FEET

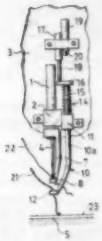
Hugues, J. M. Ducellier, Mesnil Saint Pere, France, assignor to Broderie de Mesnil St Pere S.A.R.L., Troyes, France

Filed Dec. 1, 1981, Ser. No. 326,338

Claims priority, application France, Dec. 10, 1980, 80 26231

Int. Cl.³ D05B *29/06, 53/00*

U.S. Cl. 112—100 **15 Claims**



1. A stitching head for a stitching or embroidering machine having a workplate on which a piece of material may be advanced, said stitching head comprising a support for fixing said stitching head to the machine above the workplate; at least one sewing needle which is slidably mounted in said support; a main presser foot having a pressing heel which is pierced with at least one hole disposed in the path of said sewing needle; means cooperating with said main presser foot for continuously and automatically forming upwardly directed loops with a thread on said piece of material, said loop forming means raising a given length of said thread previously secured to said peice of material during each upward movement of the main presser foot, and nipping said length of said thread during each subsequent downward movement of the main presser foot in order to turn it down and form a loop which is thereafter secured on the piece of material through a stitch made by said sewing needle.

4,438,713

EMBROIDERY STITCH FORMATION DEVICE FOR SEWING MACHINE

Takashi Kato, Kiryu, Japan, assignor to Eltac Co. Ltd., Sizuoka and Tokai Industrial Sewing Machine Co. Ltd., Kasugai, both of, Japan, part interest to each

Filed May 13, 1983, Ser. No. 494,555

Claims priority, application Japan, May 18, 1982, 57-83713; May 18, 1982, 57-83714; May 18, 1982, 57-72212[U]; Jun. 22, 1982, 57-107055

Int. Cl.³ D05C *3/02, 7/08*

U.S. Cl. 112—100 **4 Claims**

1. A device for embroidery stitch formation by a lockstitch sewing machine having a needle bar equipped with a needle provided with a piece of needle thread through a needle hole thereof and a lockstitch bobbin provided with a piece of lockstitch bobbin thread therein comprising:

an outer cylinder which is mounted around the needle bar movably upward and downward in unison with the motion of the needle bar,

a nipple having a passage therethrough fitted to the lower end of the outer cylinder,

a passageway for needle thread and a passage for a cord being provided slantwise through a frame and the outer cylinder,

a rotary ring which is rotatably arranged on the outer cylinder and is rotatably supported by a supporter of a supporting rod which is fastened to the frame,

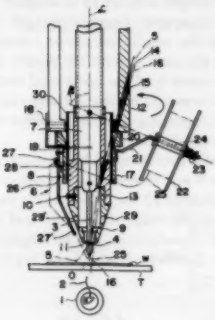
a drive grear arranged on the upper periphery portion of the rotary ring,

a support arm provided with a tilted shaft on which is

mounted a bobbin on which bobbin thread is wound being positioned fixedly on the outer periphery of the rotary ring at the position lower than the drive gear, and

a guide bar having guide holes for guiding a piece of bobbin thread supplied from the bobbin being mounted on the rotary ring,

whereby embroidery stitches are formed by thread members comprising: a piece of needle thread supplied through a passageway to be threaded with a needle, a piece of lockstitch bobbin thread supplied from a lockstitch bobbin both of which join in a formation of lockstitch seam and a piece of cord hanging down in parallel with a needle bar through a passageway, which is wound with turns of a piece of bobbin thread supplied from a bobbin mounted on a shaft of a support arm which is rotatably fixed on a rotary ring arranged rotatable around an outer cylinder, said bobbin thread being locked by said needle thread during the process of stitch formation.

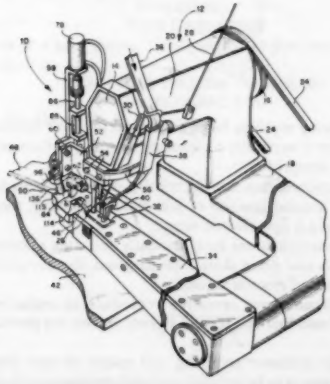


4,438,714

RADIUS BLADE CUTTING APPARATUS FOR A SEWING MACHINE

Samuel W. Smith, Carlisle, and Harold C. McVey, Paris, both of Ky., assignors to Blue Grass Industries, Inc., Carlisle, Ky.

Filed Nov. 27, 1981, Ser. No. 325,347
Int. Cl.³ D05B *65/02*
U.S. Cl. 112—130 **14 Claims**



1. An improved sewing machine of the type in which a continuous strip of material is sewn to a workpiece as the workpiece is moved past a sewing needle, wherein the improvement comprises:

a pair of blade members rotatably mounted upon the sewing machine for rotation about a common blade axis substantially parallel to and spaced from the strip of material and adjacent to the needle, each of the blade members having a cutting surface which is directed substantially radially with respect to the blade axis whereby the cutting surfaces both extend along respective radii from the blade axis in order to effect shearing along their entire radial extent substantially simultaneously;

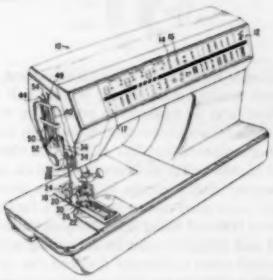
moving means for effecting coordinated counter-rotation of the blade members from a rest position allowing passage of the strip of material and the workpiece to a cutting position in which the cutting surfaces of the blade members cooperate to snip the strip of material by a shearing action after the sewing of the strip of material to the workpiece is complete and the workpiece is moved away from the path of the blade members.

4,438,715

BUTTONHOLE SEWING REPAIR

William H. Dunn, Branchville; William J. Edwards, Cranbury, and Philip F. Minalga, Piscataway, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Nov. 17, 1980, Ser. No. 207,538
Int. Cl.³ D05B *3/06, 3/02*
U.S. Cl. 112—158 B **5 Claims**



1. A method for repairing an incomplete buttonhole in a work material on a sewing machine having a needle bar, a feed system, actuating means for reciprocating said needle bar and actuating said feed system, means for selectively suspending needle bar reciprocation, and means for implementing a buttonhole from an initiating position, said method comprising the steps of:

a. repositioning said work material at the initiating position for said incomplete buttonhole;

b. activating said means for suspending needle bar reciprocation and said means for implementing a buttonhole;

c. actuating said actuating means for actuating said feed system while suspending needle bar reciprocation during that portion of said incomplete buttonhole already stitched;

d. reinitiating needle bar reciprocation substantially at the point where said buttonhole is incomplete.

4,438,716

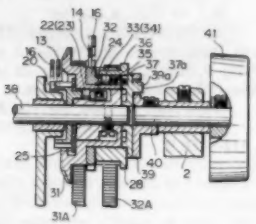
MULTI-STITCH SEWING MACHINE

Akio Koide, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 230,600, Feb. 2, 1981, abandoned. This application May 12, 1983, Ser. No. 493,044
Claims priority, application Japan, Feb. 1, 1980, 55-9941
Int. Cl.³ D05B *1//14*
U.S. Cl. 112—168 **1 Claim**

1. A selecting device for a double-function sewing machine having a first stitch forming mechanism including a drive shaft (38) for producing one type of stitch, a second stitch forming mechanism for producing another type of stitch and a single

machine drive motor (6), said selecting device comprising a first belt wheel (31) mounted on the drive shaft (38) and being rotatable relative to said drive shaft; first transmission means (31A) connecting the first belt wheel to the machine drive motor; first clutch means (20–24) arranged between the first belt wheel and the drive shaft and being displaceable between an operative position in which said first clutch means connects the first belt wheel to the drive shaft and an inoperative position in which said first clutch means disconnects the first belt wheel from said drive shaft, said first clutch means including a first cam (20); a second belt wheel (36) mounted on the first belt wheel and being rotatable relative to the first belt wheel second transmission means (32A) connecting the second belt wheel to the motor; second clutch means (32–34) arranged between said second belt wheel and said first belt wheel and



being displacable between an operative position in which said second clutch means connects said second belt wheel to said first belt wheel and an inoperative position in which said second clutch means disconnects said second belt wheel from said first belt wheel, wherein the first and second clutch means and the first and second belt wheels are mounted on said drive shaft (38), said second clutch means including a second cam (32); and operator-controlled means including a first lever (13) and a second lever (14) and being selectively operated to cause one of said first and second levers to cooperate with one of said first and second cams to thereby displace one of said first and second clutch means into said inoperative position while the other of said first and second levers is held in an inoperative position so that the other of said first and second clutch means may remain in said operative position.

4,438,717

NEEDLE PROTECTOR FOR SEWING MACHINES

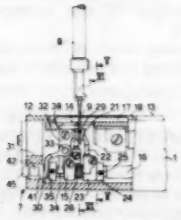
Giancarlo Minella; Bruno Motta, both of Milan, and Egidio Pedone, Corsico, all of Italy, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 29, 1981, Ser. No. 268,024

Claims priority, application Italy, Nov. 12, 1980, 25918 A/80

Int. Cl.³ D05B *55/06, 1/10*

U.S. Cl. 112—227 **2 Claims**



1. A sewing machine of the double chain stitch type having a feed dog and presser foot for advancing a workpiece and a reciprocating needle bar with at least one needle carried thereby and at least one looper operatively connected to a horizontal shaft simultaneously driven within the machine base through reciprocating and oscillating movements to effect movement of the looper in an elliptical pathway about the needle, said sewing machine comprising:

(a) a looper support **15** fixedly mounted on and for movement with the horizontal shaft within the machine's base;

(b) a loop pusher element **21** disposed upstream of the needle **9**;

(c) an oscillatable support element **32** operatively associated with said looper support **15** to support a needle protector **29** on the upper end of said oscillatable support element **32** and move the needle protector toward and away from operative association with the needle during the reciprocating movement of the horizontal shaft, said oscillatable support element **32** having a lower end that defines a pair of spaced depending arms **34** between which the horizontal shaft extends; and

(d) said needle protector **29** being disposed downstream of the needle **9** and mounted on the upper end of oscillatable support element **32** for preventing a variance in the operating phase between the needle and looper during the formation of each stitch and the displacement of the needle in the direction of advancing the workpiece.

4,438,718

PHASE INDICATION DEVICE OF SEWING MACHINE

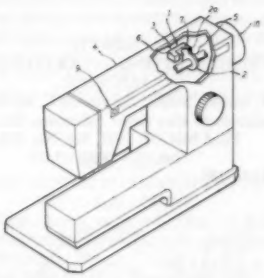
Susumu Hanyu, Hachioji, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Apr. 28, 1982, Ser. No. 372,854

Claims priority, application Japan, Apr. 28, 1981, 56-60572[U]

Int. Cl.³ D05B *69/22*

U.S. Cl. 112—274 **5 Claims**



1. In a sewing machine having a main drive shaft rotated by a drive motor to vertically reciprocate a needle, a phase indication dev ce comprising;

first detection means for electrically detecting a predeterminedf angular position of said main drive shaft, thereby producing a first electric signal;

second detection means for electrically detecting a condition in which said drive shaft is deenergized, thereby producing a second electric signal;

electric circuit means operative to produce an output when both of said first and second electric signals are produced; and

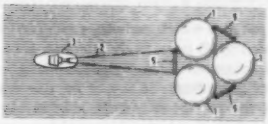
an electric indicator receiving said output of said electric circuit means to be indicative of said predetermined angular position of said main drive shaft;

said second detection means including a switch which is closed and opened in association with operation of a speed controller of said sewing machine to energize and deenergize said drive motor, said switch being opened when said speed controller is not operated and thereby producing said second electric signal.

4,438,719
CONTAINER FOR TRANSPORTING COMPRESSED GAS, SUCH AS NATURAL GAS, AND METHOD OF CONSTRUCTING THE CONTAINER

Ulrich Finsterwalder, Munich, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,590
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111408
Int. Cl.³ B63B *25/08*
U.S. Cl. 114—74 A **13 Claims**

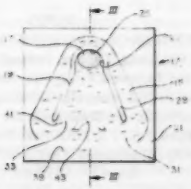


1. Device for transporting gas, such as natural gas, which has been reduced in volume, such as by one of pressurization and liquefaction, comprising a buoyant hollow container in the form of a solid of rotation with a curved generatrix, said hollow container is a hollow sphere formed of reinforced concrete, a wall forms said container having an outside surface and an inside surface with at least a watertight coating deposited on the outside surface, three band-like groups of reinforcing members are positioned in said wall for reinforcing said container, each of said groups comprises a plurality of rings disposed in spaced parallel relation with the rings in each said group intersecting the rings in the other said groups at right angles, said groups comprise a first said group, a second said group and a third said group, said first group located in the middle region of said wall of said container and said second and third groups are arranged at a number of locations inwardly and outwardly of said first group.

4,438,720
TILT DETECTOR

Worth R. Conn, Dallas, Tex., assignor to Detectors, Inc., Graham, Tex.

Filed Feb. 8, 1982, Ser. No. 346,559
Int. Cl.³ G01C *9/10*
U.S. Cl. 116—215 **11 Claims**



1. A tilt detector for accompanying goods to be transported to determine whether said good have been transported in a recommended position without being inclined beyond a predetermined angle comprising:

a. a first fluid of a first density;

b. a second mass of a second density less than said first density;

c. a horseshoe-shaped baffle with a trapping end in the form of an inner apex for trapping said second mass under the buoyant force of gravity when in a vertical position with its open end in the opposite direction such that at least part of said second mass is freed to move out of said baffle when tilted beyond a pre-determined angle of tilt; the degre of the sides of said baffle being related to said predetermined angle;

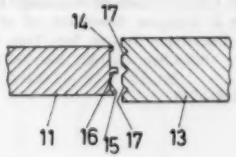
d. a thin container having at least a transparent window for viewing at least said trapping end for ascertaining if said second mass has been freed;

such that said tilt detector can be affixed to goods, containers and the like to tell if they have been tilted too much during transportation and the like; said tilt detector being resettable by inverting to replace said less dense second mass within said horseshoe-shaped baffle.

4,438,721
SEALANT APPLYING APPARATUS FOR CAN BODY BLANKS

Kiyoshi Kawamata, Ohmiya, Japan, assignor to Nihon Seikan Kabushiki Kaisha, Japan

Division of Ser. No. 35,904, May 3, 1979, abandoned. This application Apr. 3, 1981, Ser. No. 250,677
Int. Cl.³ B05C *1/08, 1/16*
U.S. Cl. 118—249 **2 Claims**



1. An apparatus for applying a thin coating of sealing substance to the edges to be side-seamed of a can body blank, comprising:

a pair of coating rollers on the opposite sides of the conveying path for carrying a can body blank, each located to face the corresponding longitudinal or lateral side edge of the can body blank for applying a thin coating of sealing substance thereto and each having a central circumferential protrusion, side circumferential protrusions, and circumferential recesses all of which surround the periphery of said coating roller, said central protrusion being slightly higher than said side protrusions; and

a pair of transfer rollers each spaced from the corresponding coating roller, each having circumferential V-shaped recesses surrounding the periphery thereof and located opposite the corresponding central and side protrusions of said coating roller, and further having a sealing substance supply container in which said transfer roller is partly immersed.

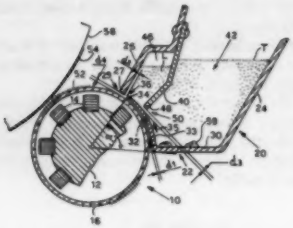
4,438,722
DEVELOPMENT UNIT FOR ELECTROPHOTOCOPIERS

Riccardo Forlani, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 15, 1983, Ser. No. 513,815
Claims priority, application Italy, Aug. 2u, 1983, 68026 A/82
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—657 **8 Claims**

1. A development unit for electrophotocopiers, comprising a magnetic brush (10) in which a rotatable sleeve (16) of non-magnetic material encloses a plurality of magnets (14) fixed on to a rotatable shaft (12), and a toner container (20) situated adjacent to the sleeve in order to feed the magnetic brush through a slit (36) with the toner freed from any lumps or foreign bodies, characterised in that the container (20) comprises an arcuate base wall (32) embracing a portion of the

sleeve (16) and bounded by an edge (34) adjacent to and spaced from a side wall (27) of the container so as to define the toner feed slit (36) wherein the action of the variable magnetic field



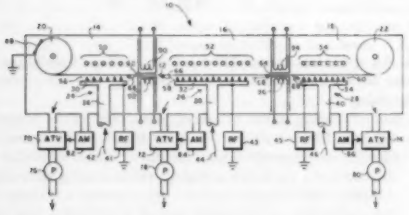
produced by the rotating magnets (14) urges the toner (T) along the arcuate base wall (32) towards the slit and breaks up lumps in the container.

4,438,723

MULTIPLE CHAMBER DEPOSITION AND ISOLATION SYSTEM AND METHOD

Vincent D. Cannella, Detroit; Masatsugu Izu, Birmingham, and Stephen J. Hudgens, Southfield, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 28, 1981, Ser. No. 306,146
Int. Cl.³ C23C *13/10, 13/12*
U.S. Cl. 118—718 **24 Claims**



1. A system for depositing a body of material upon a substrate, said body having at least two layers of different composition, said system comprising:

a first chamber including means for depositing a first layer of material on said substrate;

first source means for providing said first chamber with a first plurality of gases;

a second chamber including means for depositing a second layer of material on said substrate, said second layer of material having a composition differing from the composition of said first layer by the absence of at least one element;

second source means for providing said second chamber with at least one gas; said at least one gas differing from said first plurality of gases introduced into the first chamber by the absence of said at least one element;

slot means interconnecting said first and second chambers;

means for transferring said substrate from said first chamber to said second chamber through said slot means; and

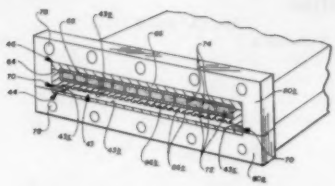
first isolation means for limiting diffusion of said at least one element from said first chamber to said second chamber, said first isolation means including means for establishing a gas flow from said slot means into said first chamber at a rate sufficient to maintain at least a 10^4 ratio of the concentration of said at least one element in said first chamber as compared to the concentration of said at least one element in said second chamber.

4,438,724

GROOVED GAS GATE

Joachim Doehler, Union Lake; David A. Gattuso, Pontiac, and Kevin R. Hoffman, Sterling Heights, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Aug. 13, 1982, Ser. No. 407,983
Int. Cl.³ C23C *13/10*
U.S. Cl. 118—719 **3 Claims**



1. In a gas gate which includes a relatively narrow passageway adapted to (1) operatively interconnect a pair of adjacent deposition chambers and (2) substantially reduce the back diffusion of gases from the first of the pair of chambers to the second of the pair of chambers; a relatively thin, relatively large area substrate adapted to travel from one of the pair of chambers wherein a first layer is deposited onto a surface thereof, and into the other of the pair of chambers wherein a second layer is deposited atop the first layer; means adapted to introduce at least one gas into the first of the pair of chambers; means adapted to introduce at least one additional gas into the second of the pair of chambers; gas removing means for establishing a pressure differential between the adjacent chambers whereby the gas flow therebetween is substantially unidirectional; and means for urging the unlayered surface of the substrate toward a passageway wall; the improvement comprising, in combination:

at least one elongated groove formed in the passageway wall toward which the unlayered surface of the substrate is urged, said groove being substantially coextensive with the length of the passageway so as to operatively interconnect the adjacent chambers, whereby a substantially unidirectional gas flow is established through the slit defined by the space between the gas gate passageway wall and the unlayered surface of the substrate for substantially reducing the backflow of gases from the first to the second of the chambers.

4,438,725

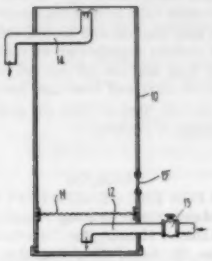
METHOD OF GROWING MOLLUSCS

Brendan W. O'Sullivan, Dublin, Ireland; Leo J. Leggett, Salisbury East, and Maxwell V. Melvin, Brighton, both of Australia, assignors to ICI Australia Limited, Melbourne and State of South Australia, Adelaide, both of, Australia

Filed Feb. 11, 1982, Ser. No. 347,981
Claims priority, application Australia, Feb. 11, 1981, PE7551
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—4 **16 Claims**

1. In the process of cultivating bivalve mollusc on micro-cultch, the improvement comprising a first step of preparing the micro-cultch by screening particulate matter using an oversize screen and a fines screen to produce particles in the size range of 50 microns to 500 microns, a second step of contacting an aqueous culture containing free-swimming bivalve mollusc larvae at the eyed-larvae stage with the said micro-cultch, a third step of screening the aqueous culture with a screen of substantially the same dimensions as the said

oversize screen when at least 20% of the free-swimming larvae have become spat, and a fourth step of growing the screened



spat to the seed stage in a culture medium wherein the spat are maintained in suspension.

4,438,726

COVER GRATING FOR MANURE REMOVAL CANALS IN STABLES

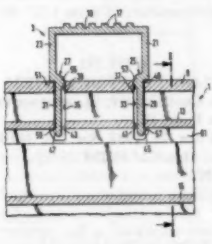
Herbert Osthoff, Lindenstrasse 9, Mühldorf/Ehring, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 438,959

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1981, 3146564

Int. Cl.³ A01K *1/00*

U.S. Cl. 119—28 **4 Claims**



1. A cover grating for manure removal canals in stables comprising elongated lower supports disposed in spaced apart relation, elongated upper supports disposed in spaced apart relation and extending transversely of the elongated direction of said lower supports, said upper supports supported on and detachably engaged to said lower supports, said lower supports having openings therein extending transversely of the elongated direction thereof, said upper supports having downwardly extending flanges extending in the elongated direction of said upper supports and engageable within the transverse openings in said lower supports for securing said upper supports against displacement in the elongated direction of said lower supports, wherein the improvement comprises that said flanges are inserted transversely of their elongated direction into said openings in said lower supports and at least one of said flanges on each of said upper supports can be lockably engaged in said lower support against removal opposite to the insertion direction, said lower supports have a box-like shape in transverse section comprising a number of walls and said upper supports have a U-shape transverse section with the U-shaped section inverted relative to said lower supports when said upper supports are inserted into said lower supports, and at least one of said flanges on each of said upper support being inserted downwardly into said transverse openings in said lower supports, said elongated flanges of said upper supports form the legs of the U-shaped transverse section and are supported on a wall surface of said lower support, and said upper supports each having an upwardly facing substantially horizontal surface forming the plane of said upper supports and said wall surfaces of said lower supports supporting said flanges are disposed in parallel relation to the plane of said upper supports, said wall surfaces of said lower supports supporting said flanges of said upper supports form the upper horizontal wall of said box-shaped section of said lower support, at least one of said elongated flanges on each of said upper supports includes a vertically extending pawl strip forming the lower end of said flange and depending downwardly from the location where said flange is supported on the wall surface of said lower support, said pawl strip is securable in detachable locking engagement with said lower supports against being removed from said lower support in the direction opposite to the insertion direction of said upper supports, and said pawl strip is elastically deflectable in the elongated direction of said lower supports when said upper support is inserted into said lower supports and for removing said upper supports from said lower supports.

4,438,727

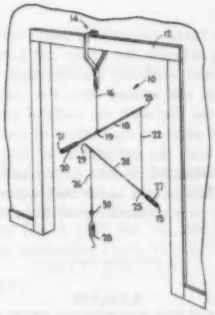
MOBILE TOY FOR KITTEN OR SIMILAR ANIMAL

Kenneth H. Thompson, 4613 Saul Rd., Kensington, Md. 20895

Filed Jan. 22, 1982, Ser. No. 341,794

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—29 **20 Claims**



1. A mobile comprising:

a first rod having first and second ends and a longitudinal center;

first support means for freely suspending said first rod at a first support point located intermediate said first and second ends and displaced from said longitudinal center;

first weighted means secured to said first rod for applying a first gravitational torque to said rod about said first support point;

further means secured to said first rod for applying a second gravitational torque, of lesser value than said first gravitational torque, about said first support point;

wherein said further means includes;

a second rod having first and second ends and a longitudinal center;

second support means for freely suspending said second rod at a second support point located intermediate the ends of the second rod and displaced from the longitudinal center of said second rod;

second weighted means secured to said second rod for applying a third gravitational torque to said second rod about said second support point; and

additional means secured to said second rod for applying a fourth gravitational torque, of lesser value than said gravitational torque, to said second rod about said second support point.

4,438,728

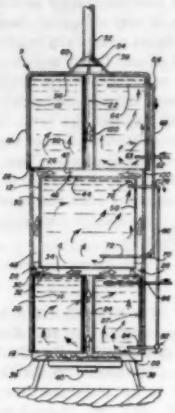
MULTI-STAGE HOT WATER HEATING APPARATUS

Eugene E. Fracaro, 533 E. 11th St., Lockport, Ill. 60441

Filed Dec. 29, 1980, Ser. No. 220,742

Int. Cl.³ F22B *5/00*

U.S. Cl. 122—14 **9 Claims**



1. A hot water heater comprising three tanks arranged vertically in a casing wherein the upper and lower tanks have a center flue disposed vertically therethrough, the middle tank being imperforate and spaced from the walls of the casing forming an annular flue with the walls of said casing, burner means positioned adjacent the bottom of said lower tank and communicating with the center flue of said lower tank, an exhaust stack positioned on said casing and communicating with the center flue of said upper tank whereby the gases of combustion flow in a serpentine path from the burner to the exhaust stack.

4,438,729

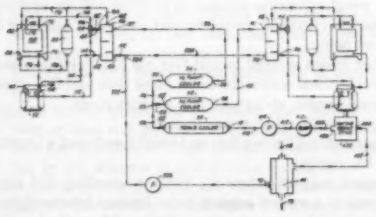
FLAMELESS NITROGEN SKID UNIT

Stanley B. Loesch; James C. St. John, and Danny K. Mints, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 31, 1980, Ser. No. 136,047

Int. Cl.³ F22B *3/06*; F17C *7/02*

U.S. Cl. 122—26 **62 Claims**



1. A method of heating a first fluid, said method comprising the steps of:

pumping said first fluid with a main pump means;

driving said main pump means with a first internal combustion engine;

operating a second internal combustion engine;

circulating a coolant fluid through a coolant system means;

transferring heat energy from said first and second internal combustion engines to said coolant fluid;

transferring heat energy from said coolant fluid to said first fluid in a coolant fluid-to-first fluid heat exchanger; and

exerting a varying load on said second internal combustion engine and thereby transferring an increased amount of heat energy from said second internal combustion engine to said coolant fluid and from said coolant fluid to said first fluid as said load exerted on said second internal combustion engine is increased.

4,438,730

PROCESS FOR THE GENERATION OF STEAM

Gerhard Link, Mainz; Siegfried Jung, Florsheim-Wicker; Reinhold Zapp, Waldem; Helmut Bär, Offenbach am Main, and Herbert Mader, Nauheim, all of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,152

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110520

Int. Cl.³ F22B *27/00*

U.S. Cl. 122—40 **19 Claims**

1. A process for producing steam, said process comprising generating steam by evaporating water at a temperature not higher than about 115° C. and a pressure not substantially higher than the vapor pressure of water at the temperature of evaporation, mechanically compressing the steam generated to a pressure which is from 3.0 to 4.5 times that at which the water was evaporated, and further compressing the mechanically compressed steam by means of at least one steam jet ejector to a pressure of from 3.0 to 6.0 bar which is at least 1.4 times the pressure to which the steam was compressed mechanically and a temperature of from 140 ° to 165° C.

4,438,731

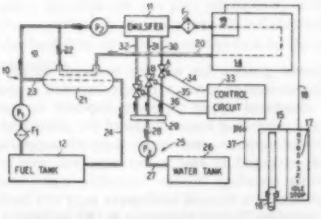
FLOW CONTROL SYSTEM

Joseph D. Maggio, Cook County, Ill., assignor to Mercor Corporation, Franklin Park, Ill.

Filed Jan. 26, 1982, Ser. No. 342,900

Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 N **11 Claims**



1. An improved fuel delivery system for a locomotive diesel engine having a source of fuel under pressure, a first flow means for delivering fuel at varying rates to said engine, a fuel emulsifier incorporated in said first flow means for mixing a diluent fluid with said fuel upstream of said engine, a source of diluent fluid under pressure, a second flow means for delivering diluent fluid to said emulsifier, and a throttle means having a series of step positions for setting different fuel rates through said first flow means, the improvement comprising:

selectively controllable valve means in said second flow means for regulating the flow rate of diluent fluid therethrough and

control means for activaing said valve means as a function of the step position of said throttle means such that a predetermined desired mixture proportion of diluent fluid and fuel is respectively achieved in said emulsifier for particular fuel flow rates set by said throttle means.

11. A process for regulating delivery of diluent fluid to a fuel emulsifier for a combustion engine having a throttle means having a series of step positions for setting varying flow rates of fuel through said emulsifier to said engine, comprising:

connecting a source of diluent fluid under pressure in a fluid path to said emulsifier,

providing selectively controllable valve means in said fluid path for regulating the flow rate of diluent fluid therethrough, and

activating said valve means as a function of the step positions of said throttle means such that a predetermined desired mixture proportion of diluent fluid and fuel is respectively achieved in said emulsifier for particular fuel flow rates set by said throttle means.

4,438,732

COOLING ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

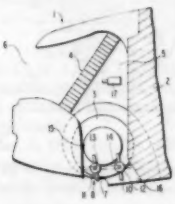
Peter R. Seifert, Sindelfingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 28, 1982, Ser. No. 383,187

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121650

Int. Cl.³ F01P *5/06*

U.S. Cl. 123—41.05 **7 Claims**



1. A cooling arrangement for a motor vehicle internal combustion engine accommodated in a sound-absorbing shroud, the cooling arrangement including a cooling air duct means having an air intake and air exhaust, a radiator means disposed in the air duct means, and a fan means cooperable with the radiator means and disposed at a position downstream of the radiator means, as viewed in a normal flow direction of cooling air, characterized in that means are provided for regulating an air throughflow through the radiator means, the means for regulating are disposed downstream of the radiator means, as viewed in the normal flow direction of cooling air, in an area of the air exhaust of the air duct means, the fan means is disposed exteriorly of the air duct means, means are provided for communicating the fan means with the air duct means, and in that means are provided for controlling an operation of the fan means and a position of the means for regulating such that the means for regulating closes the air exhaust when the fan means is operable.

4,438,733

AIR COOLED INTERNAL COMBUSTION ENGINE

Yoshihiro Sasaki, Katano, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

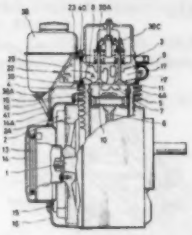
Filed Feb. 5, 1981, Ser. No. 231,909

Claims priority, application Japan, Feb. 5, 1980, 55-12616

Int. Cl.³ F01P *1/08*

U.S. Cl. 123—41.62 **9 Claims**

1. An air cooled internal combustion engine comprising: a cooling fan unitarily formed on a flywheel fixed to one end of an engine crank-shaft, a cooling fan case adapted to cover said cooling fan and to guide the flow of cooling air generated by said cooling fan towards the engine body, an air cleaner connected to a suction port of said engine, and a silencer connected to an exhaust port of said engine wherein said suction port is located on the same side of said engine as said flywheel, while said exhaust port is located on the opposite side of said engine from said flywheel, and wherein said air cleaner is formed unitarily with said cooling fan case, the space in said cooling fan case being divided into two passages by a partition



plate, one of said passages being adapted to guide the flow of cooling air generated by said cooling fan to the cylinder head of said engine body in a direction perpendicular to the crank-shaft axis of said engine, while the other being adapted to guide said flow of cooling air to the cylinder block of said engine in a direction substantially parallel to the crank-shaft axis of said engine.

4,438,734

OVERHEAD CAMSHAFT ENGINE

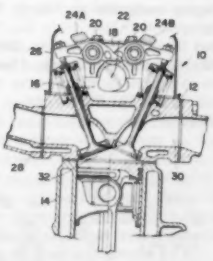
Yoshimasa Hayashi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 2, 1982, Ser. No. 384,259

Claims priority, application Japan, Jun. 5, 1981, 56-86626

Int. Cl.³ F01L *1/04*

U.S. Cl. 123—90.27 **9 Claims**



1. An overhead camshaft engine having a camshaft, comprising:

a cylinder head secured to a cylinder block of the engine;

a plurality of cam bracket members disposed on said cylinder head for rotatably supporting the camshaft on said cylinder head;

at least one beam member secured to said plurality of cam bracket members for securely connecting said cam bracket members to each other; and

a rocker cover, independent of said beam member and secured to said cylinder block to cover said camshaft, said plurality of cam bracket members, and said beam member.

4,438,735

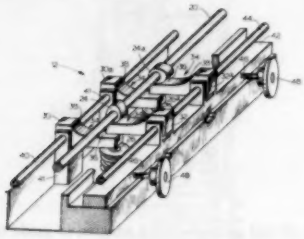
APPARATUS AND TIMING MECHANISM FOR CONTROLLING THE VALVE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Filed Oct. 13, 1981, Ser. No. 310,637

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **4 Claims**



1. In combination with an internal combustion engine including a crankshaft, a first timing member mounted for rotation with said crankshaft, a camshaft, a cam on said camshaft, a second timing member mounted for rotation with said camshaft, an endless member entrained about said first and second timing members, a third rotatable member about which said endless member is also entrained, means shifting said third member toward and away from said second member to angularly displace said second member and said camshaft relative to said first member and said crankshaft, a rocker arm having a straight cam follower surface and a curved cam follower surface, and means interconnected with said shifting means for simultaneously moving said rocker arm to shift said cam follower surfaces in accordance with the shifting of said third member toward and away from said second member.

4,438,736

VARIABLE VALVE TIMING ARRANGEMENT WITH AUTOMATIC VALVE CLEARANCE ADJUSTMENT

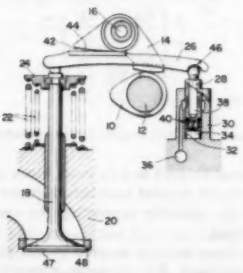
Seinosuke Hara; Hiromichi Ofuji, and Takaharu Gotou, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Mar. 9, 1982, Ser. No. 356,269

Claims priority, application Japan, Mar. 10, 1981, 56-32190[U]

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **11 Claims**



1. In an internal combustion engine,

a valve for controlling a port;

a lever which abuts said valve at a first end thereof;

a piston which is biased in one direction and on which a second end of said lever is pivotally mounted;

a cam which is rotatable in synchronism with a crankshaft of said engine;

a second lever which abuts said cam at a first end thereof and which abuts said lever at a second end thereof; and

support means which pivotally supports said second lever at a location between the first and second ends thereof, said support means being operative to move an axis about which said second lever pivots in first and second directions to increase and decrease the lift of said valve, respectively.

4,438,737

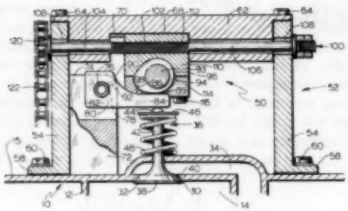
APPARATUS AND METHOD FOR CONTROLLING THE VALVE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Corliss O. Burandt, Plymouth, Minn., assignor to Investment Rarities, Incorporated, Minneapolis, Minn.

Filed Oct. 13, 1981, Ser. No. 310,510

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.17 **17 Claims**



2. Apparatus for operating a valve of an internal combustion engine having a reciprocable valve member for opening and closing a valve port in communication with a combustion chamber of the engine, the apparatus comprising a rocker arm, means mounting one end of said rocker arm for pivotal movement about a fixed axis so that the other end of said rocker arm acts against said valve member, a camshaft, a cam on said camshaft engageable with said rocker arm, and means for shifting said camshaft relative to said fixed axis so that said cam is engageable with various longitudinal portions of said rocker arm between its said other end and its said one end, said shifting means including bearing means for rotatably supporting said camshaft and means threadedly engaging said bearing means for moving said bearing means to effect said shifting of said camshaft relative to said axis.

4,438,738

ROCKER ARM AND PROCESS FOR PRODUCING THE SAME

Hiroyuki Kosuda; Yasuo Kogo, both of Shizuoka; Yasuhiro Mishima, Aichi, and Masahiro Nakagawa, Shizuoka, all of Japan, assignors to Toho Beslon Co., Ltd., Tokyo and Toyota Jidosha Kabushiki Kaisha, Aichi, both of, Japan

Filed Nov. 26, 1982, Ser. No. 444,659

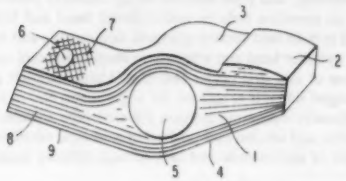
Claims priority, application Japan, Nov. 26, 1981, 56-189762; Nov. 26, 1981, 56-189763

Int. Cl.³ F01L *1/18*

U.S. Cl. 123—90.39 **22 Claims**

1. A rocker arm made from a carbon-fiber reinforced resin wherein the central axis of a rocker shaft hole through which the rocker shaft is inserted is referenced as Z-axis, a line parallel to a surface of a valve side of the rocker arm opposite a surface having a cam contact face and which crosses the Z-axis at point **0** at a right angle, is referenced as a Y-axis, the line that is parallel to the surface of the cam side of the rocker arm opposite the surface having the cam contact face and which

crosses the Z-axis at point 0 at a right angle is referenced as a Y'-axis, and the bisector of the angle YOY' is referenced as a X-axis, and wherein $\cos^2\beta$, the average of $\cos^2\beta$ of the carbon fibers present on the Y-axis side with respect to a X-Z plane and carbon fibers present on the Y'-axis side with respect to X-Z plane, is not more than 0.9924, β being the angle of orientation with respect to the Y-axis of a first group of fibers as the fibers are projected onto the X-Y plane and the angle of orientation with respect to the Y'-axis of the second group of fibers as they are projected onto the X-Y' plane, and $\cos^2\alpha$, the average of $\cos^2\alpha$ of the first group of fibers and second group of fibers is not less than $\frac{1}{2}$, α being the angle of orientation with respect to the Y-axis of the first group of fibers as they are projected onto Z-Y plane and the angle of orientation with respect to the Y'-axis of the second group of fibers as they are projected onto Z-Y' plane.



4,438,739

HYDRAULIC LASH ADJUSTER

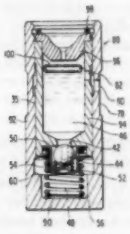
Fuminao Arai, Kariya; Hisashi Kodama, Nagoya, and Yoshio Okabe, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 4, 1981, Ser. No. 240,337

Claims priority, application Japan, Mar. 6, 1980, 55-28481

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.55 **5 Claims**



1. An hydraulic lash adjuster comprising a hollow cylindrical body member having a bottom wall at one end thereof, a hollow plunger member having a bottom wall at one end thereof and an upper wall at the upper end thereof slidably disposed within said body member, said plunger and said body member defining a pressure chamber between the bottom walls thereof, said plunger member having a reservoir chamber therein and an aperture in said bottom wall thereof, check valve means operatively associated with said aperture to permit fluid contained in said reservoir chamber to pass through said aperture to said pressure chamber while preventing fluid flow in the opposite direction, clearance means between said body member and said plunger member and passage means through said plunger means communicating said clearance means with said reservoir chamber, spring means located in said pressure chamber for biasing said plunger member away from the bottom wall of said body member and a structurally independent, free floating member disposed on and substantially covering the upper surface of said hydraulic fluid in spaced relation to said upper wall of said reservoir to prevent air above the fluid from being absorbed by the fluid in operation.

4,438,740

VALVE SEAT INSERTS FOR INTERNAL COMBUSTION ENGINES

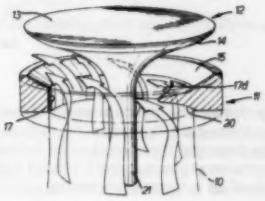
Roger H. Slee, Warwick, England, assignor to Brico Engineering Limited, Coventry, England

Filed Sep. 23, 1981, Ser. No. 304,835

Claims priority, application United Kingdom, Sep. 23, 1980, 8030688

Int. Cl.³ F01L *3/06*; F02F *1/42*

U.S. Cl. 123—188 S **8 Claims**



1. A reciprocating internal combustion engine comprising:
at least one cylinder,
a valve-controlled inlet for feeding a charge to the cylinder,
a piston slidable within the cylinder for compressing the charge within the cylinder,
a valve seat insert arranged in said inlet,
an edge formed on said valve seat insert,
means defining an aperture in the insert whose periphery is formed by said edge,
an annular valve-engaging surface extending around said means defining an aperture,
a first area of said means defining an aperture lying to one side of a plane including the axis of said annular valve-engaging surface, said aperture being bounded by a longer portion of said edge having the shape of a part of the circumference of a circle whose centre lies on the axis of the annular valve-engaging surface,
a second area of said means defining an aperture lying on the other side of said plane, said first area being larger than said second area,
means bounding said second area including two curved sections each extending from an end of said longer edge portion and meeting at a cusp whose distance from the centre of said circle defining said edge portion is less than the radius of said circle whereby an incoming charge passing to said insert in a path generally parallel to the axis of said valve-engaging surface is deflected from said path on passage through said means defining an aperture, the charge, when deflected, travelling in directions having a velocity profile thereacross which are controlled by the shape of said two curved sections.

4,438,741

DEVICE FOR CONTROLLING A FLOW IN A HELICAL TYPE INTAKE PORT

Takeshi Okumura; Kiyoshi Nakanishi, both of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 22, 1982, Ser. No. 341,911

Claims priority, application Japan, Apr. 7, 1981, 56-51149

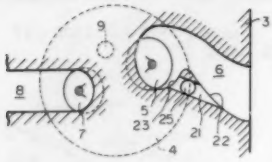
Int. Cl.³ F02F *1/42*

U.S. Cl. 123—188 M **13 Claims**

1. A device for controlling the flow in a helical type intake port in an internal combustion engine having a cylinder block

containing a cylinder and a cylinder head containng an intake valve and an exhaust valve for the cylinder, said helical port being formed in said cylinder head with a helical portion around said intake valve and a substantially straight inlet portion tangentially contiguous to the helical portion, said device comprising:

a bypass passage branched off from said inlet portion and connected to an end portion of said helical portion, said bypass passage being formed completely within said cylinder head;



normally closed valve means arranged in said bypass passage for controlling the flow area of said bypass passage;

means for detecting the amount of air fed into a cylinder of the engine to produce a control signal indicating that the amount of air is increased beyond a predetermined value; and

actuating measn for actuating said valve means in response to said control signal to open said valve means when the amount of air is increased beyond said predetermined value.

4,438,742

INTERNAL COMBUSTION ENGINE

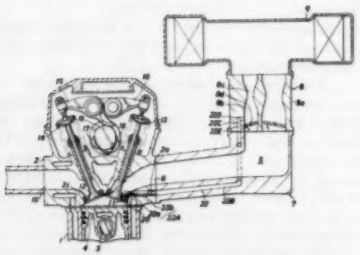
Yuzuru Namba, and Kenichi Aoyagi, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 27, 1981, Ser. No. 296,854

Claims priority, application Japan, Sep. 29, 1980, 55-135602; Sep. 29, 1980, 55-135604

Int. Cl.³ F02B *31/00*; F02M *35/10*

U.S. Cl. 123—308 **7 Claims**



1. An internal combustion engine comprising:

a combustion chamber defined by a cylinder, a cylinder head, and a piston fitted in said cylinder;

a main suction path connecting a carburetor with said combustion chamber via a suction port which is formed in said cylinder head, said combustion chamber having a side and said suction port having an end portion located at said side of said combustion chamber, said suction port being adapted to be opened and closed by a suction valve which is disposed in said end portion of said suction port at said side of said combustion chamber; and

a sub-suction path provided separately of said main suction path and having its outlet end opened into said suction port immediatley upstream of said suction valve for injecting a gas into said combustion chamber during the suction stroke thereby to generate a swirl of the suction gas to turn centering around the axis of said cylinder;

the internal combustion engine characterized in that the outlet end portion of said sub-suction path is constructed of a pipe member, said pipe member having a first outlet end which is open and directed toward said suction port and a second end portion opposite said first outlet end, said cylinder head further having an outside end face with a side therein, said pipe member being rotatably press-fitted in an insertion hole in said cylinder head and being opened in both said suction port and said outside end face of said cylinder head and which is so shaped that said open direction of said first outlet end of said pipe member can be changed when it is rotated for adjustment, and in that a rotationally operating portion for said pipe member is formed in said second end portion of said pipe member at said side of said outside end face of said cylinder head.

4,438,743

INTERNAL COMBUSTION ENGINE

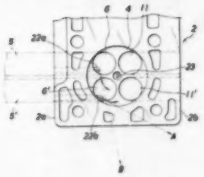
Yuzuru Namba, and Kenichi Aoyagi, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Sep. 14, 1981, Ser. No. 301,524

Claims priority, application Japan, Nov. 13, 1980, 55-159716

Int. Cl.³ F02B *31/00*; F02M *35/10*

U.S. Cl. 123—308 **5 Claims**



1. An internal combustion engine comprising:

A. a combustion chamber defined by a cylinder head, a cylinder attached to said cylinder head and a piston operably mounted within said cylinder and adapted to make both compression strokes and suction strokes; and

B. a carburetor adapted to mix fuel with air to produce an air-fuel mixture and adapted to provide said air-fuel mixture to the combustion chamber; and

C. a main suction path, through which the air-fuel mixture is provided to the combustion chamber, terminating in two suction valves, said suction valves opening into said combustion chamber; and

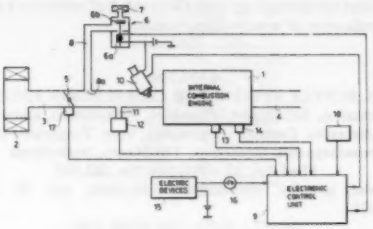
D. two sub-suction paths provided in the main suction path, a first sub-suction path terminating in a first nozzle and a second sub-suction path terminating in a second nozzle, said first and second nozzles opening into the combustion chamber in a direction tangential to the axis of the cylinder;

wherein the first nozzle and the second nozzle are oriented, with respect to one another, such that gases passing through the first nozzle and gases passing through the second nozzle produce swirls of gases in the combustion chamber in an identical direction, said swirls centering around the axis of the cylinder.

4,438,744
IDLING RPM FEEDBACK CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

Shumpei Hasegawa, Niiza, Japan, assignor to Honda Motor Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1983, Ser. No. 456,866
Claims priority, application Japan, Jan. 18, 1982, 57-5838
Int. Cl.³ F02M 23/06
U.S. Cl. 123—327 **2 Claims**



1. A method for controlling the quantity of supplementary air being supplied to an internal combustion engine in a feedback manner responsive to the difference between actual engine rpm and desired idling rpm, said engine having an intake passage, a throttle valve arranged in said intake passage, and an air passage having one end communicating with said intake passage at a location downstream of said throttle valve and another end with the atmosphere, respectively, said supplementary air being supplied to said engine through said air passage and said intake passage, said method comprising the steps of: (a) comparing an actual value of engine rpm with a first predetermined value which is larger than an upper limit of a desired idling rpm range including said desired idling rpm; (b) comparing said actual value with a second predetermined value which is equal to said upper limit of said desired idling rpm range when it is determined at the step (a) that said actual value is smaller than said first predetermined value; (c) effecting control of the quantity of supplementary air in feedback mode when it is determined at the step (b) that said actual value is smaller than said second predetermined value, (d) determining whether or not the control of the supplementary air was effected in feedback mode immediately before the determination at the step (b) when it is determined at the step (b) that said actual value is larger than said second predetermined value, (e) continuing the feedback control of the quantity of supplementary air when the result of the determination at the step (d) is affirmative, and (f) effecting control of the quantity of supplementary air in decelerating mode in a predetermined manner when the result of the determination at the step (d) is negative.

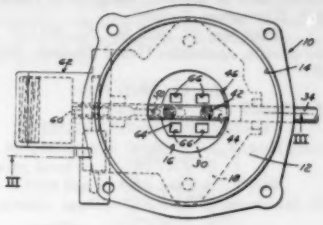
4,438,745
ENGINE IDLE SPEED CONTROL DEVICE

Shunso F. Watanabe, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 404,183, Aug. 2, 1982, abandoned. This application Sep. 7, 1982, Ser. No. 415,050
Int. Cl.³ F02D 9/08
U.S. Cl. 123—339 **5 Claims**

1. An engine idle speed control device for an automotive type internal combustion engine having an air throttling body with an air induction passage therethrough and a disc type throttle plate mounted for a rotatable movement across the passage between an essentially closed idle speed position and a wide open position to control flow of air through the passage, the device including

an opening through the throttle plate for the passage of air therethrough, a shuttle type slide valve slidably mounted for a movement across the opening to variably control the flow of air therethrough, and power operated means responsive to engine operating conditions to move the slide valve to control the air flow through the opening to control the engine speed independently of the angular

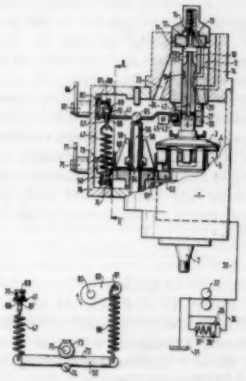


position of the throttle plate and the air flow around the throttle plate.

4,438,746
RPM GOVERNOR FOR A FUEL INJECTION PUMP

Max Greiner, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 21, 1982, Ser. No. 400,549
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1981, 3137520
Int. Cl.³ F02D 1/04
U.S. Cl. 123—373 **9 Claims**



1. An rpm governor of a fuel injection pump for internal combustion engines having a governor lever which is pivotable about a shaft and arranged at one end to actuate a supply quantity adjusting member of the fuel injection pump, a governor spring, said governor lever being actuated at another end counter to an rpm-dependent force by said governor spring connected thereto by an upper end thereof, a correction lever, said governor spring further includes a lower end which engages one end portion of said correction lever, a correction spring, said correction spring including one end that is connected to another end of said correction lever, said correction spring having another end connected to an arbitrarily adjusting setting lever, a bearing means provided between opposite ends of said correction lever, said correction lever being supported by and pivotable about a fulcrum point formed by said bearing means, said correction lever being displaceable along its length with respect to said bearing means thereby changing a length of said correction lever between said fulcrum point and said governor spring whereby an rpm force on said governor lever is changed for adjustment of said supply quantity adjusting member.

4,438,747
FUEL INJECTION PUMPING APPARATUS

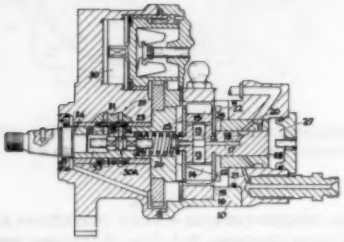
Robert T. J. Skinner, High Wycombe, and Brian W. Tumber, Greenford, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed May 17, 1982, Ser. No. 379,147

Claims priority, application United Kingdom, May 28, 1981, 8116307

Int. Cl.³ F02D *17/00*

U.S. Cl. 123—450 **11 Claims**



1. A fuel injection pumping apparatus for supplying fuel to internal combustion engines comprising a rotary distributor member mounted in a body, plungers carried in a bore in the distributor member, a cam ring having cam lobes operating as the distributor member rotates to effect inward movement of the plungers thereby to cause delivery of fuel by the apparatus, a low pressure pump for supplying fuel to said bore, said distributor member being axially movable to determine the amount of fuel supplied at each delivery stroke of the plungers, fluid pressure operable means for varying the axial setting of the distributor member, said fluid pressure operable means comprising a resiliently loaded servo valve responsive to a control pressure, a variable volume chamber defined at least in part by a surface movable with the distributor member, said servo valve acting to control the admission of fluid to and the escape of fluid from said chamber and resilient means for opposing the force exerted on said surface by the fluid pressure in said chamber.

4,438,748
METHOD OF SUPPLYING FUEL TO AN INTERNAL COMBUSTION ENGINE DURING START-UP

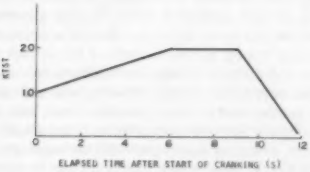
Kenji Ikeura; Hiroshi Yamaguchi; Kunifumi Sawamoto, and Tatsuo Morita, all of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 2, 1982, Ser. No. 353,825

Claims priority, application Japan, Mar. 4, 1981, 56-29797

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—491 **8 Claims**



1. A method of supplying fuel to a fuel-injected internal combustion engine during start-up, comprising the steps of:

(a) sensing whether a starter motor for the engine is on or off;

(b) sensing engine temperature;

(c) sensing at least one other engine condition;

(d) determining on the basis of the sensed engine conditions whether fuel combustion is taking place within the engine;

(e) determining a first fuel supply value T_2 on the basis of engine temperature;

(f) changing said first value T_2 at a predetermined rate until fuel combustion within the engine is determined to be taking place;

(g) opening a fuel injection valve of the engine for a length of time corresponding to said first value T_2; and

(h) after the starter motor is first sensed to be on, repeating steps (c) through (g) until the crankshaft rotates at a speed indicative of steady-state operation.

4,438,749
FUEL SUPPLY SYSTEM FOR COMBUSTION ENGINES

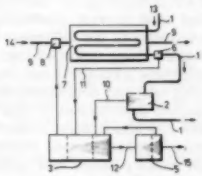
Guusstaaf A. Schwippert, Pijnacker, Netherlands, assignor to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek, The Hague, Netherlands

Filed Jul. 15, 1981, Ser. No. 283,607

Claims priority, application Netherlands, Jul. 15, 1980, 8004071

Int. Cl.³ F02D *1/00*; F02B *3/00*

U.S. Cl. 123—494 **7 Claims**



1. A device for controlling the air-fuel ratio in a fuel supply system for combustion engines, comprising:

an opto-electronic sensor for measuring the index of light refraction of the fuel, said opto-electronic sensor including a light source, a light conductor positioned at least partially in contact with the fuel, and a light receiver, whereby the measurement of the index of light refraction is based on a critical-angle measurement, and the quantity of light taken up by the light receiver at least comprises a variable portion resulting from non-direct irradiation and dependent on the index of refraction of the fuel;

an electronic circuit responsive to said opto-electronic sensor for generating a control signal in accordance with the state of aggregation or composition of said fuel; and

a temperature detecting element positioned in the fuel supply conduit and connected to said electronic circuit for correcting the measured index of refraction and thereby the control signal in accordance with temperature changes in the supplied fuel.

4,438,750
DEVICE FOR FUEL DELIVERY TO INTERNAL COMBUSTION ENGINE WITH VAPORIZATION OF INJECTED FUEL

Jury B. Sviridov; Alexandr M. Andreev; Vadim V. Kozlovsky; Alexandr M. Lukin, and Evgeny V. Novikov, all of Leningrad, U.S.S.R., assignors to Nauchno Proizvodstvennoe Obiedinenie Po Toplivnoi Apparature Dvigatelei, Leningrad, U.S.S.R.

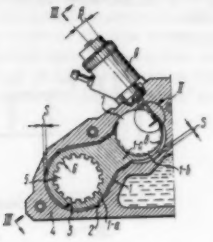
Filed Dec. 28, 1981, Ser. No. 335,211

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **7 Claims**

1. A device for fuel delivery to an internal combustion engine with vaporization of injected fuel, comprising an intake manifold through which the air is sucked into the engine cylinder, an exhaust manifold through which exhaust gases are discharged, a vaporizing element comprising an elongated member including two end sections, one end section being

disposed in the exhaust manifold, the second end section being disposed in and being designed to conform to the walls of the ducts of the intake manifold receiving said second end section, said end section including an operating surface extending along the surface of the intake manifold from the portion of the second end section closest to the first end section to, at least, a diametrically opposite portion of said intake manifold, and an



injection nozzle whose orifice is directed onto the diametrically opposite portion of said operating surface of the vaporizing element as close to the direction of a tangent to the operating surface as possible, whereby an injected fuel charge moves circumferentially over the operating surface in the direction of its temperature gradient toward the portion of the second end section closest to the first end section.

4,438,751

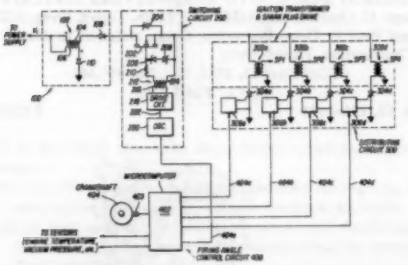
HIGH VOLTAGE GENERATING CIRCUIT FOR AN AUTOMOTIVE IGNITION SYSTEM

Shinichiro Iwasaki, Troy, Mich., assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 383,607, Jun. 1, 1982, and Ser. No. 268,889, Jun. 1, 1981, Pat. No. 4,382,430. This application Apr. 27, 1983, Ser. No. 489,189

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—606 **14 Claims**



1. A high voltage generating circuit for an automotive ignition system including at least one spark plug, comprising:

a power source;

a current control circuit coupled to said power source for generating a linearly increasing current signal;

controlled high frequency switching means coupled to said current control circuit for initiating generation of said linearly increasing current signal, said controlled high frequency switching means having an output in the form of a high frequency voltage and a high frequency linearly increasing current;

ignition transformer means adapted to be coupled to said spark plug and connected to the output of said switching means for stepping up said high frequency voltage supplied from said switching means for application to said spark plug such that a breakdown voltage of said spark plug is exceeded and a linearly increasing current is developed across the electrodes of said spark plug; and

firing angle control means coupled to said controlled high frequency switching means and said transformer means for controlling the timing of generation of said high frequency linearly increasing current between the electrodes of said spark plug.

4,438,752

VEHICLE IGNITION SYSTEM

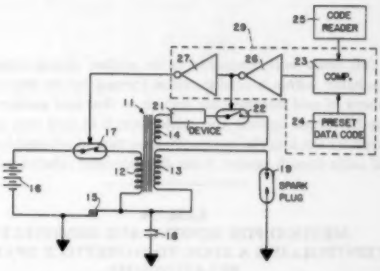
William S. H. Cheung, 95B Robinson Rd., Ground Floor, Hong Kong, Hong Kong

Filed Sep. 4, 1981, Ser. No. 299,490

Claims priority, application United Kingdom, Jul. 24, 1981, 8122957

Int. Cl.³ B60R *25/00*

U.S. Cl. 123—630 **8 Claims**



1. A vehicle ignition system comprising:

a transformer having a primary winding, secondary winding and auxiliary winding;

means for alternately connecting said primary winding to a voltage source whereby a magnetic flux is generated, said magnetic flux inducing an ignition current in said secondary winding;

a security switch means serially connecting a power dissipating load to said auxiliary winding, said load reducing said secondary winding current prohibiting an ignition current of sufficient magnitude for providing ignition to said vehicle;

a comparator for opening said security switch meansin response to a unique input code; and

means for supplying a unique code to said comparator whereby said vehicle ignition current is restored upon detection of said unique code.

4,438,753

COMPOUND BOW

Gary Simonds, Gainesville, Fla., assignor to Kidde Recreation Products, Inc., North Brook, Ill.

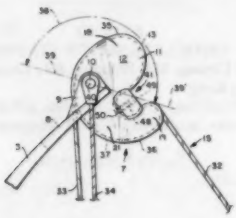
Filed Sep. 28, 1982, Ser. No. 425,683

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—24 R **10 Claims**

1. A compound bow including, a handle section, upper and lower limbs extending from said handle section and each having a tip, pivot means for supporting a displaceable member mounted adjacent each said limb tip, a cam attached to each said pivot means and having an irregularly configured external periphery, a cable track in said cam external periphery and disposed in a single vertical plane, said cam when viewed in side elevation including an enlarged main body section joined to an elongated terminal section by a reduced width intermediate section, a continuous stretch of cable sheaved within at least a portion of said track, a bowstring attached to one end of said cable stretch and a tension cable extending from the other end of said cable stretch, said cable stretch adjacent said bow-

string engaging said periphery track on said intermediate section, said cable stretch adjacent said tension cable engaging said periphery track on said main body section, portions of said cam periphery track profiled to yield a specific draw force when said bowstring is drawn, said cam arcuately displaced substantially 180° as said bowstring is drawn from brace height



to full draw and releasable cable anchor means removably attachable within a configuration formed by the external periphery of said intermediate section so that said anchor means may be forced against said cable stretch in said cam external periphery track in the intermediate section to adjustably secure said cable stretch against linear displacement relative said cam.

4,438,754

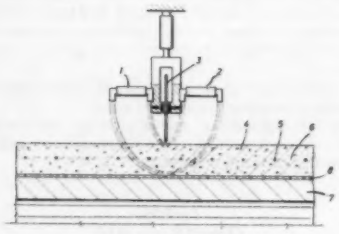
METHOD FOR SENSING AND REMOTELY CONTROLLING A TOOL TO WORKPIECE SPATIAL RELATIONSHIP

Walter C. Nanny; Thomas L. Stewart, and Dean P. Hemphill, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 66,366, Aug. 14, 1979, abandoned, which is a continuation of Ser. No. 850,311, Nov. 10, 1977, abandoned. This application Sep. 11, 1981, Ser. No. 301,259

Int. Cl.³ G01B *7/14;* **G01N** *27/72;* **G01R** *33/12*

U.S. Cl. 125—14 **3 Claims**



1. A method for cutting and removing concrete containing embedded reinforcement from about a pipe, said cutting being effected with a saw blade without cutting the pipe, comprising:

disposing two magnetic field generating probes on opposite sides of the saw blade, each probe having a north and south pole face and the saw blade being magnetically insulated;

generating a magnetic field extending between the north pole of each probe and the south pole of the other probe;

sensing the massive disturbing effect of the pipe and the minimal disturbing effect of the reinforcement;

distinguishing between the massive disturbing effect and the minimal disturbing effect to determine the distance between the saw blade and the pipe; and

cutting and removing the concrete containing embedded reinforcement without cutting the pipe by maintaining not less than the determined distance between the pipe and the saw blade.

4,438,755

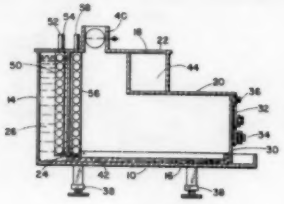
WOOD BURNING STOVE HAVING WATER HEATER

Daniel J. Moffett, Route 2, Box 99B, Osceola, Wis. 54020

Filed Jan. 31, 1983, Ser. No. 446,043

Int. Cl.³ F24C *13/00*

U.S. Cl. 126—34 **5 Claims**



1. A solid fuel burning stove comprising

(a) a combustion chamber having openings for introduction of fuel, intake of air and exhaust of smoke;

(b) a tank adjacent said combustion chamber having the top thereof open to the atmosphere;

(c) a heat exchange device positioned in said tank adapted to cause preheating of water circulated therethrough;

(d) a second heat exchange device located in the combustion chamber adapted to heat said preheated water to an elevated temperature, and

(e) suitable conduit means for carrying a flow of water into said first heat exchange device, from said first heat exchange device to said second heat exchange device and therefrom to a hot water distribution system.

4,438,756

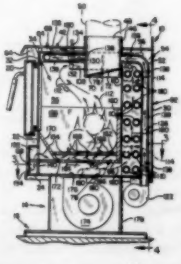
APPARATUS AND METHOD FOR ACCOMPLISHING EFFICIENT BURNING OF BIOMASS FUEL MATERIALS

Joseph G. Chamberlain, 12350 SW. 124th, Tigard, Oreg. 97223, and Paul E. Tiegs, Beaverton, Oreg., assignors to Joseph G. Chamberlain, Tigard, Oreg.

Filed Dec. 13, 1982, Ser. No. 449,461

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—131 **5 Claims**



1. A heating apparatus comprising:

a combustion chamber having a fresh air inlet and a grate to support biomas fuel material thereon;

a passageway having a first end portion originating generally near the top and a second end portion terminating generally near the bottom of the combustion chamber;

the first end portion comprising two conduits with the inlet ends thereof in communication with two openings in the

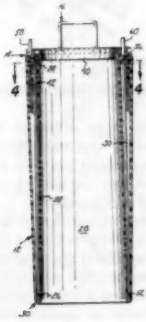
combustion chambr and the outlet ends thereof in communication with inputs to a het exchanger, each conduit including a catalytic converter positioned to receive hot combustion product gases produced in the combustion chamber for transformation to substantially pollutant-free residual exhaust gases that are delivered to the heat exchanger to convert for use the heat carried thereby, and the second end portion comprising an opening in communication with a flue and a flow control means in communication with the outlet of the heat exchanger to vary the quantity of substantially pollutant-free residual exhaust gases introduced into the combustion chamber and to discharge the remaining quantity thereof through the flue.

4,438,757

DEVICE FOR REOPENING AN ICE-BOUND WATER SOURCE

Lyle C. Anderson, Rte. #6, Fergus Falls, Minn. 56537

Filed Aug. 13, 1981, Ser. No. 292,625
Int. Cl.³ F24H *1/20*
U.S. Cl. 126—360 R **7 Claims**



1. A device for reopening an ice-bound water source, comprising:

(a) a double-walled hollow tubular member having open top and bottom ends defining a space between the walls;

(b) at least one tube extending between said double walls from said top and toward said bottom end for carrying fluid between said walls;

(c) a first fluid impervious barrier between said walls at the top thereof, said barrier including upper and lower surfaces first and second concentric depressions on its top surface, said first depression including at least one inlet aperture sized to receive the upper end of said at least one tube, said second depression including at least one outlet passage providing fluid communication through the upper and lower surfaces of said barrier; and

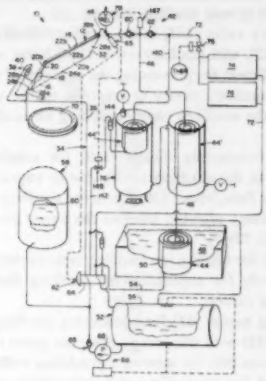
(d) cover means located atop said barrier and in fluid tight connection therewith for covering said depressions to create fluid tight concentric passageways, said cover means including an inlet in fluid communication with said first depression and an outlet in fluid communication with said second depression, whereby warmed fluid can be circulated from the inlet to the outlet and thereby transfer heat to the tubular member.

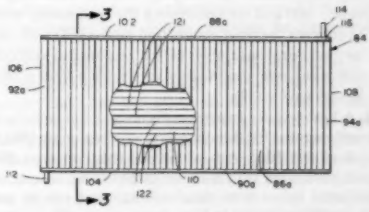
4,438,758

SOLAR HEATING UNIT AND HEAT TRANSFER APPARATUS

Carroll E. Brekke, 6130 Monterey Rd., #83, San Jose, Calif. 95138

Filed Jun. 14, 1982, Ser. No. 388,403
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—419 **14 Claims**





1. A heating unit (10), comprising:

an energy absorber panel (12) having an upper periphery (14) and a lower periphery (16) and defining an interior cavity (18);

fluid delivery means (34) for delivering working fluid to the cavity (18);

a heat exchange unit (44);

means (38) for preventing the delivering of working fluid to the cavity (18) in response to the working fluid within the cavity (18) reaching a selected level;

conducting means (42) for conducting a vapor formed in the cavity (18) due to vaporizing of the working fluid from a location in the cavity (18) above the selected level to the heat exchange unit (44);

a fluid (48) in contact with an exterior (50) of the heat exchange unit (44), the fluid (48) being in a quantity sufficient and the heat exchange unit (44) being of a construction sufficient to normally condense the vapor into the liquid working fluid;

fluid conducting means (52) for conducting the condensed working fluid from the heat exchange unit (44) to the fluid delivery means (34), the unit (10) being sealed and having sub-atmospheric pressure therein, the working fluid being selected to boil at said sub-atmospheric pressure at a temperature in a range from about 27° C. to about 99.5° C.;

a space heating unit (74);

vapor directing means (75) for directing vapor formed from said working fluid to said space heating unit (74) in re-

sponse to ambient temperature adjacent said space heating unit (74) being below a selected value;

means (72) for conducting fluid condensed from said vapor in said space heating unit (74) to said fluid delivery conduit (34);

an auxiliary heat exchange unit (44") having an auxiliary interior cavity;

an auxiliary fluid delivery conduit (142) for delivering working fluid to said auxiliary cavity;

an auxiliary valve (144) in the auxiliary fluid delivery conduit (142), said auxiliary valve (144) being of a construction sufficient for preventing the delivery of working fluid to the auxiliary cavity in response to the working fluid within the auxiliary cavity reaching an auxiliary selected level;

auxiliary conducting means (140) for conducting vapor formed in the auxiliary cavity due to vaporization of the working fluid from a location in the auxiliary cavity above the auxiliary selected level to the vapor directing means (valve in 72);

means (76) for heating the auxiliary heat exchange unit (44") sufficiently for vaporizing the working fluid within the auxiliary cavity;

connecting means (62) for connecting the fluid conducting means (52) with the energy absorber panel (12); and

sensor means (65) for sensing a condition within the cavity (18) and for controlling the connecting means (62) to connect the fluid conducting means (52) with the energy absorber panel (12) in response to said condition indicating vaporization of working fluid is occurring in said cavity (18) and for controlling the connecting means (62) to connect the fluid conducting means (52) with the auxiliary heat exchange unit (44") in response to said condition indicating non-vaporization of working fluid is occurring in said cavity (18).

11. A heat transfer apparatus (84) which comprises a flexible first wall member (86*a*) having first member upper (88*a*), lower (90*a*), first end (92*a*), and second end (94*a*) portions (88*a*, 90*a*, 92*a*, 94*a*) a second wall member (86*b*) having second member upper (88*b*), lower (90*b*), first end (92*b*) and second end (94*b*) portions (99*b*, 90*b*, 92*b*, 94*b*), said second wall member (86*b*) being generally parallel to and adjacent to said first wall member (86*a*), said respective first (86*a*) and second (86*b*) member upper (88*a*, 88*b*), lower (90*a*, 90*b*), first end (92*a*, 92*b*) and second end (94*a*, 94*b*) portions (88*a*, 88*b*, 90*a*, 90*b*, 92*a*, 92*b*, 94*a*, 94*b*) being sealed together to form upper (102), lower (104), first end (106), and second end (108) peripheries (102, 104, 106, 108) and to define an interior cavity (110) and said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) forming the major heat exchange portions of said heat transfer apparatus (84), said heat transfer apparatus (84) further including a liquid inlet (112) communicating with said interior cavity (110) and a vaporized fluid outlet (114) communicating with said interior cavity (110) adjacent said upper periphery (102), a structure (118) extending from a respective one (86*a* or 86*b*) of said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) and contacting a respective other (86*a* or 86*b*) thereof, said structure (118) being of a construction sufficient to provide such contacting over no more than about 15% of the surface area of said respective other (86*a* or 86*b*) of said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) and to allow a fluid in said interior cavity (110) to flow with substantially no impedence both from said lower periphery (104) towards said upper periphery (102) and from said first end periphery (106) towards said second end periphery (108), said first (86*a*) and second (86*b*) wall members (86*a*, 86*b*) being of sufficient rigidity to not collapse together when said interior cavity (110) has a pressure of as little as about one-fifth atmosphere.

4,438,759

HEAT-PIPE TYPE SOLAR WATER HEATER

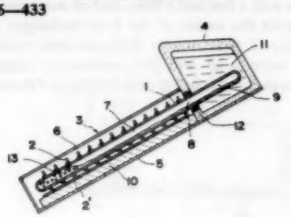
Soichi Kitajima, Nara; Kazuyuki Iwamura, Ikoma, and Yasuhiko Takeda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

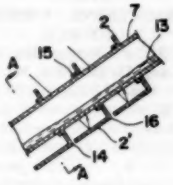
Filed Dec. 10, 1981, Ser. No. 329,516

Claims priority, application Japan, Dec. 24, 1980, 55-186783[U]; Jan. 30, 1981, 56-12940[U]

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—433 5 Claims





1. A heat-pipe type solar water heater comprising:

a main housing;

a plurality of heat pipes arranged longitudinally of said housing and having vaporizing portions and condensing portions, said vaporizing portions being positioned inside said housing and said condensing portions projecting out from one end of said housing;

a heat exchange tank mounted to said one end of said housing for enclosing said condensing portions and

a plurality of heat collector plates arranged inside said housing in intersecting relation with said heat pipes, each heat collector plate having an upper portion formed with holes each provided with an annular flange integral with the collector plate and a lower portion bent substantially perpendicular to said upper portion to cover a space between itself and an adjacent collector plate, the vaporizing portion of each heat pipe penetrating said collector plates through corresponding holes and flanges in intimate fixed and heat conductive contact therewith.

4,438,760

CONCENTRATING REFLECTOR FOR SOLAR RADIATION OF LOW AERODYNAMIC FRICTION FORCE AND HIGH AERODYNAMIC BUOYANCY FORCE

Reinhart Radebold, Quastenhornweg 14a, 1000 Berlin 22, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,062

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1980, 730068

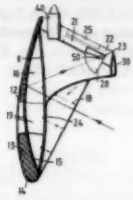
Int. Cl.³ F24J *3/02*; B64C *3/06*

U.S. Cl. 126—438 8 Claims

1. A reflector for concentrating solar radiation, comprising:

a foil having a surface of specular reflection and having a contour and configuration of a paraboloidal sector, having accordingly a leading edge and a trailing edge and a plane of symmetry;

means disposed above and underneath the foil and providing a wing-like structure of which the upper surface is transparent, there being a lower surface accordingly completing, with the upper surface, an aerodynamic, liftproducing profile;



means including a rudder and rudder support structure and extending upward from said profile, in said plane of symmetry, and contoured so that the rudder support structure includes a focal area for said paraboloid, the rudder support structure provided for receiving means for receiving radiation concentrated by the reflecting foil in said focal area.

4,438,761

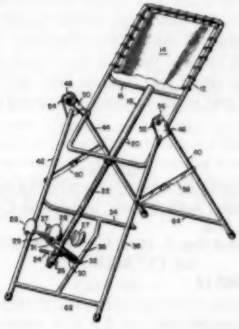
THERAPEUTIC DEVICE FOR A HUMAN BODY

Wayne H. McGowen, 4930 Mill Creek, Dallas, Tex. 75234

Continuation-in-part of Ser. No. 324,133, Nov. 23, 1981, abandoned. This application Feb. 17, 1982, Ser. No. 349,451

Int. Cl.³ A61H *1/02*

U.S. Cl. 128—75 **13 Claims**



8. A therapeutic apparatus for the human body comprising:

an elongated planar platform adapted to support the upper body in a reclining position, said platform being pivotally mounted on a fulcrum wherein said platform is pivotally displaceable about an axis transversed to the longitudinal axis of said platform;

a lower body support mounted to said platform by an elongated frame member, said elongated frame member including means for adjusting the mounting of said lower body support whereby said lower body support may be adjusted along the longitudinal axis of said platform, said lower body support including:

first support means mounted on said lower body support and positioned to extend under each foot;

ankle engagement means mounted on said lower body support and adapted to surroundingly engage and restrain the ankle portion of each foot while disposed in a first position and adapted to release each foot while disposed in a second position; and

means for automatically moving said ankle engagement means from said second position to said first position in response to a pivotal displacement of said platform.

4,438,762

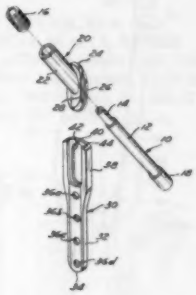
ORTHOPEDIC HIP FIXATION DEVICE

Richard F. Kyle, 825 S. 8th St., Ste. 302, Minneapolis, Minn. 55404, assignor to Richard F. Kyle, Minneapolis, Minn.

Filed Dec. 30, 1981, Ser. No. 335,808

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 BB **1 Claim**



1. A femur fracture reduction device, comprising:

an elongate shaft having a distal end and a proximal end;

a keeper connected to the proximal end of the shaft;

a guide sleeve including a cylindrical portion having a passage therethrough for slidably receiving the elongate shaft therein;

a flanged head mounted to an end of the guide sleeve;

a threaded end portion mounted on the distal end of the elongate shaft, the threaded end portion and the keeper cooperating to retain the elongate shaft inside the passage in the guide sleeve, the threaded end portion being formed for threadedly engaging the head of a patient's femur; and

a trochanteric plate including means for permitting attachment of the plate to the femur and a slot for slidably receiving the guide sleeve head at a predetermined angle with respect to the trochanteric plate, such that during use, the assembled guide sleeve and the elongate shaft with the threaded end portion mounted thereon are fitted into an aperture in the patient's femur with the threaded end portion being threadedly affixed to the head of the femur to retain the head of the femur in alignment with the neck of the femur to reduce a fracture thereof and the elongate shaft being telescopically slidable within the guide sleeve to accommodate changes which may occur during healing of the fracture.

4,438,763

AMBULATORY APPARATUS FOR USE IN COMBINATION WITH AN INTRAVENOUS DELIVERY SYSTEM

Marshall A. Zablen, 3714 Whitespeak Dr., Sherman Oaks, Calif. 91403

Continuation-in-part of Ser. No. 354,503, Mar. 3, 1982. This application Aug. 2, 1982, Ser. No. 404,505

Int. Cl.³ A61M *5/14*; A45F *5/00*

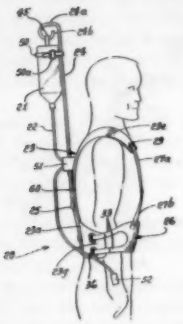
U.S. Cl. 128—133 **11 Claims**

1. In combination with an intravenous delivery system, the combination comprising

(a) a relatively rigid support sheet sized to fit flatly adjacent the lower central back and middle central back of a human patient, and having means thereon mounting an upwardly extending pole member which in turn suspends an intravenous liquid container, said member extending upwardly proximate the medial extent of said sheet, the sheet having

a lower relatively wide portion located adjacent the patient's lower back and the patient'sides, a narrowed and upwardly diverging mid-portion extending between upwardly diverging lateral edges and located adjacent the patient's mid and upper back, and terminal left and right hook shaped portions sized to fit over the patient's shoulders,

(b) a belt section adapted to extend adjacent the abdomen of the wearer, the belt section having adjustable connection to lower side extends of the support, the belt section



having a mid-portion of a vertical width generally to cover the patient's abdomen and extending at a level to provide abdominal support to the patient, after surgery, and

(c) first flexible strap means connected between the support sheet and the belt so that the strap means then extends upwardly between the belt at the front of the wearer patient, and upper extent of the support, proximate the shoulders of the wearer patient,

(d) whereby the patient may then move about with his or her arms free of constraint by the support.

4,438,764

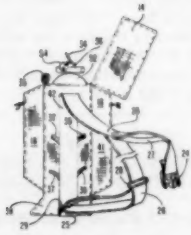
OXYGEN CADDY

Salvatore Eppolito, 77 Wert Ave., Trenton, N.J. 08610

Continuation-in-part of Ser. No. 255,565, Apr. 20, 1981, Pat. No. 4,383,528. This application Aug. 31, 1982, Ser. No. 413,415

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—205.22 **16 Claims**



1. An oxygen caddy which comprises:

(a) a rigid supporting frame adapted to hold and completely surround an oxygen tank together with its regulator and valve, said frame including a hinged top portion constructed to define a protective cage for a regulator attached to an oxygen tank within said frame;

(b) a fabric case into which said rigid supporting frame is placed, said case including at least one pocket in which oxygen delivery means may be stored, and an opening through said case into said at least one pocket, whereby a hose connecting an oxygen delivery means to an oxygen tank may extend through said opening in said case and into said pocket.

4,438,765

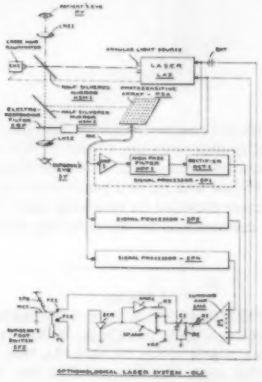
MOTION SENSITIVE FIRABLE DEVICE

Jack Wilinsky, 145 Oakdene Ave., Teaneck, N.J. 07666

Filed Jun. 4, 1981, Ser. No. 270,617

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **10 Claims**



1. A target motion sensitive firable device comprising a surgical laser for firing at a target, user operable switching means for activating said surgical laser when operated by a user, motion detector means interconnecting said switching means and said surgical laser for preventing said switching means from activating said surgical laser in response to the operation by a user when a motion is detected in the target.

4,438,766

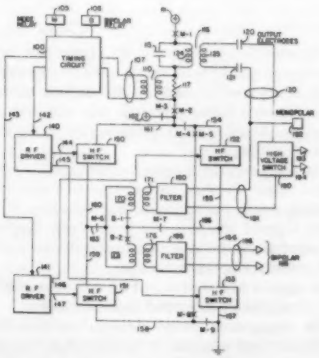
ELECTROSURGICAL GENERATOR

William J. Bowers, Aurora, Colo., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Sep. 3, 1981, Ser. No. 299,204

Int. Cl.³ A61B *17/39*

U.S. Cl. 128—303.14 **15 Claims**



1. In an electrosurgical generator for performing a plurality of electrosurgical operations having a D.C. power source, output circuitry for connection to a patient and means control-

lable by an operating surgeon for selecting one of said electrosurgical operations, the improvement comprising:

a plurality of switches;

means responsive to said selecting means for connecting said switches in a bridge configuration;

means responsive to said selecting means for connecting said bridge across said power source;

means responsive to said selecting means for connecting said output circuitry across said bridge; and

means responsive to said selecting means for generating timing signals to control said switches to selectively connect said output circuitry to said power source.

4,438,767

EXFOLIATOR DISC

Priscilla E. Nelson, 11 Brentwood Dr., Peabody, Mass. 01960

Filed Oct. 30, 1978, Ser. No. 956,260

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—304 **2 Claims**

1. An exfoliator disc for scraping and removing dead skin tissues comprising a thin, flat, circular metal blade, opposite side finger tip engageable grip portions generally centered relative to the blade, the peripheral edge of the blade including a continuous, laterially deflected scraping edge projecting laterally to only one side of said blade, said blade having a constant thickness and parallel flat surfaces extending to the deflected edge, said deflected scraping edge being formed when the blade is sheared from stock metal and having a lateral dimension in the same direction as the lateral deflection of the scraping edge that is substantially less than the thickness of the blade and a minute radial dimension measured along the radius of the disc, said deflected edge also tapering laterally to a feather edge with the peripheral side of the deflected edge forming with the peripheral edge of the blade a cylindrical surface.

4,438,768

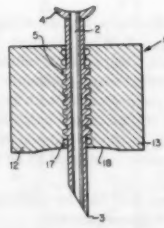
EMERGENCY CRICOTHYROIDOTOMY INSTRUMENT

Robert W. Barrickman, R.D. #2, Box 139C, Clarion, Pa. 16214

Filed Sep. 23, 1981, Ser. No. 304,807

Int. Cl.³ A61F *17/32*; A61M *15/08*

U.S. Cl. 128—305.3 **11 Claims**



1. A cricothyroidotomy instrument comprising an elongated unitary needle and a needle holder, said needle having a sharp point on one end and a longitudinal passage extending from the end of said needle with said sharp point to the opposite end of said needle, means on a portion of the exterior surface of said needle adapted to engage said needle holder, said needle holder having separable sections, each of said sections having a face adapted to abut a face of the other section, means on the abutting faces of said separable sections adapted to contact said means on the exterior surface of said needle to hold said needle in said needle holder, means to retain said separable sections in a closed relationship with said abutting faces in contact to clamp said needle in said needle holder, and means on said needle holder adapted to attach said needle holder to a patient's neck.

4,438,769

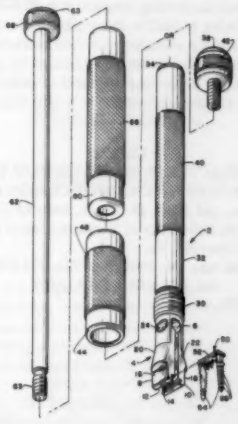
MEDICAL STAPLE DEVICE

Clyde R. Pratt, 5898 La Cumbre, Somis, Calif. 93066, and Roger G. Carignan, 219 Mara Ave., Ventura, Calif. 93004

Filed Apr. 15, 1982, Ser. No. 368,621

Int. Cl.³ A61B *17/18*

U.S. Cl. 128—334 R **16 Claims**



1. A medical staple device for holding, driving and withdrawing same comprising the combination: an integrally constructed staple retaining member having integral, spaced and opposed portions normally and inherently urged away from each other and being adapted to receive and retain a medical staple therebetween, said integral, spaced and opposed portions having force application surfaces to which force may be applied to overcome the normal and inherent urging away force to releasably retain a medical staple therebetween; and a force applying and force reduction member cooperatively associated with said integrally constructed staple retaining member for selective application or removal of discrete forces upon said force application surfaces.

4,438,770

SKIN INCISING DEVICE

Hans P. O. Unger, Värtavägen 35, 115 29 Stockholm, and Johan E. H. Westberg, Rödstuguvägen 14, 181 31 Lidingö, both of Sweden, assignors to Hans Peter Olof Unger and Johan Eric Hayden Westberg, both of, Sweden

Continuation of Ser. No. 132,409, Mar. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 945,099, Sep. 22, 1978,. This application Aug. 6, 1982, Ser. No. 406,050

Claims priority, application Sweden, Mar. 23, 1979, 7902628

Int. Cl.³ A61B *17/32*

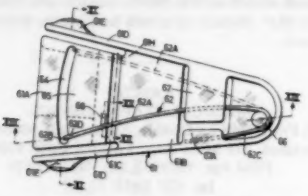
U.S. Cl. 128—637 **10 Claims**

4. A device for making a skin incision of controlled length and uniform depth comprising:

(a) a cutter guide having a base surface adapted to be pressed

against the patient's skin, said base surface having a flat skin-engaging depression of a length for responding to the controlled length, there being a slot in said base surface extending across said depression; and

(b) a resiliently biased cutter supported on and guided by said cutter guide and having a cutting tip projecting through said slot at said flat depression by a distance



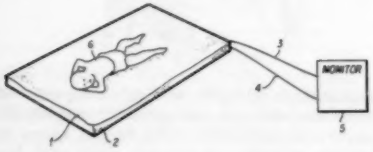
corresponding to said uniform depth, said cutting tip being in a non-projecting position at both ends of said slot, said cutter being guided to move parallel to the skin in said depression from a releasably latched retracted position at one end of said slot under the force of its bias to an advanced position at the opposite end of said slot, the force of said base surface against the skin effecting such release.

4,438,771

PASSIVE CONTACTLESS MONITOR FOR DETECTING CESSATION OF CARDIOPULMONARY

W. Otto Friesen, and Gene D. Block, both of Charlottesville, Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Apr. 26, 1982, Ser. No. 371,933
Int. Cl.³ A61B *5/08, 5/10*
U.S. Cl. 128—671 **10 Claims**



1. An apparatus for detecting cessation of cardiopulmonary functioning of a human body, comprising:

a passive conductive means, spaced apart from said body in which a potential is directly induced by the movement of said body due to the movement of the charge of said body when said cardiopulmonary functioning occured;

monitor means responsive to said directly induced potential to produce a indication of cessation of cardiopulmonary functions of said body.

4,438,772

DIFFERENTIAL STETHOSCOPE

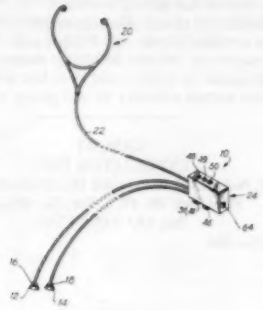
Martin J. Slavin, Dix Hills, N.Y., assignor to Intech Systems Corp., Hauppauge, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,516
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—715 **16 Claims**

1. A portable stethoscope for listening to internal sounds of a body comprising:

first and second sensor means for selective application at two selectively and variably spaced portions of the external surface of said body and for detecting said internal sounds and outputting electrical signals in response to said sounds, said sound signals including a first signal desired for detection and a second undesired signal, said first signal being masked by said second signal;

comparison means for receiving said electrical signals from said first and second sensor means and outputting a comparison signal, said comparison signal being the difference



between concurrently received electrical signals from said first and second sensor means;

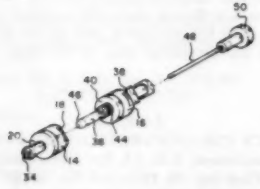
output means receiving said comparison signal and outputting a sensible signal, said sensible signal corresponding to said difference comparison signal of said detected sound signals.

4,438,773

SUBARACHNOID BOLT

Fred Letterio, Philadelphia, Pa., assignor to Paul L. Sweeney, Jr., Laurel Springs, N.J.

Filed Mar. 15, 1982, Ser. No. 358,444
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—748 **6 Claims**



1. A subarachnoid bolt for use in measuring intracranial pressure including:

a lower bolt half having a top, an enlarged flange and a coaxially arranged tubular member extending downwardly from said flange, said tubular member being adapted to be inserted into a substantially complementary shaped hole in a patient's skull with said flange overlying the outer surface of the skull around said hole, said tubular member having a lowermost end which is radially expandable so that the same is adapted to be secured to the patient's skull;

means on said lower bolt half for allowing the same to be held to prevent rotation thereof;

an upper bolt half screwed to the top of said lower bolt half, said upper bolt half having a downwardly extending tubular element fitted within said tubular member of said lower bolt half when said upper and lower bolt halves are screwed together.

4,438,774

CIGARETTE CONVEYING DRUMS

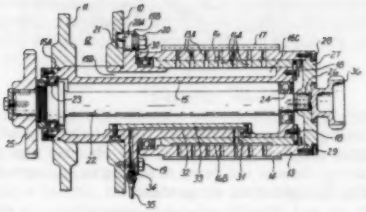
Derek H. Dyett, and Rex Harvey, both of High Wycombe, England, assignors to Molins Limited, London, England

Filed Dec. 8, 1981, Ser. No. 328,619

Claims priority, application United Kingdom, Dec. 18, 1980, 8040525

Int. Cl.³ A24C 5/32, 5/35

U.S. Cl. 131—282 8 Claims



1. Apparatus for conveying cigarettes by means of one or more fluted drums comprising a frame including spaced front and back walls defining between them a suction manifold; a fluted drum disposed in front of the frame and having ports in communication with the flutes thereof; a tubular drum-carrying member which extends through an opening in the front wall of the frame, engages and seals in or around an aperture in the rear wall of the frame, and has a flange by which it is secured to the front wall of the frame, the fluted drum being positioned for rotation around the tubular member; and a drive shaft which extends axially through the tubular member, is secured to the front end of the drum, is supported by bearings carried by the tubular member, and carries at its rear end behind the rear wall of the frame a gear or other means by which it is driven; said tubular member being provided with a passage within the thickness of the wall of the tubular member in the region where it extends through the front wall of the frame, so that suction may be transmitted to the ports of the flutes of the drum from the manifold via said passage.

4,438,775

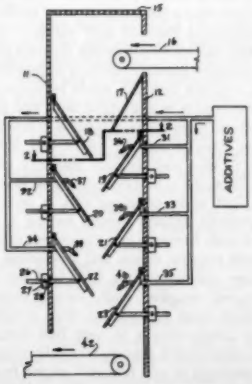
APPARATUS AND PROCESS FOR TREATING TOBACCO

Charles D. Mays, Lewisville; Max A. Wagoner, and Daniel G. Williard, both of Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 2, 1981, Ser. No. 269,289

Int. Cl.³ A24B 3/18

U.S. Cl. 131—300 14 Claims



1. A process for treating cut or shredded tobacco which comprises introducing a continuous stream of cut or shredded tobacco into inlet means in the upper portion of a substantially vertically disposed power, allowing the tobacco so introduced to fall by gravity from the upper portion of the tower to outlet means in the lower portion of the tower, momentarily deflecting the falling tobacco by means of a plurality of cooperating, vertically spaced baffles extending inwardly from opposing sides of said tower in altenating fashion intermediate the inlet and outlet means and directing a treating fluid onto the falling tobacco from a plurality of spraying devices located within the tower at points intermediate the inlet and outlet means.

4,438,776

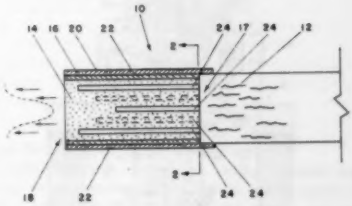
CIGARETTE FILTER

Charles G. Lamb, Anchorage, and Robert A. Sanford, Prospect, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jun. 24, 1982, Ser. No. 391,883

Int. Cl.³ A24D 3/00, 3/04

U.S. Cl. 131—336 6 Claims



1. A filter for a cigarette comprising:

a permeable filter rod of generally cylindrical configuration having an upstream end and a mouth end;

means defining a plurality of blind-end channels in said filter rod, each of said channels being open at one end to the upstream end of said filter rod and extending therefrom in generally the longitudinally direction of said filter rod a predetermined distance less than the length of said filter rod, said channels being dispersed throughout the cross-sectional body of said filter rod the closer a channel being to the perimeter of said filter rod the greater its predetermined extending distance; and

filter wrapping material extending longitudinally of and circumscribing said filter rod, said wrapping material being air permeable to allow ambient ventilating air into the body of said filter rod and into said blind-end channels.

4,438,777

FREEZE PROTECTION VALVE WITH IMPROVED RESETTING CAPABILITY

Fred L. Pirkle, Controls Consulting Company, R.D. 2, Box 353, Phoenixville, Pa. 19460

Filed Apr. 29, 1983, Ser. No. 490,153

Int. Cl.³ E03B 7/12

U.S. Cl. 137—62 7 Claims

1. A valve for use in draining a liquid system to prevent the system from freezing under low ambient temperature conditions comprising:

means providing a valve chamber connectable to the liquid system, said valve chamber having a drain outlet;

a valve element cooperating with said drain outlet and movable from a closed position in which it closes the drain outlet to an open position in which the drain outlet is opened;

means connected to the valve element for urging the valve element toward its open position;

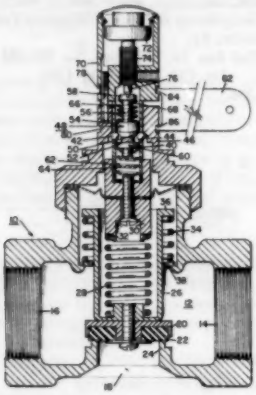
first latch means for holding the valve element in its closed

position, said first latch means being releasable to permit the valve element to move to its open position under the influence of the urging means;

a temperature sensor including a temperature sensing element and means responsive to the temperature sensing element for releasing the first latch means when the temperature of the sensing element falls below a predetermined level;

means for conducting heat from the liquid system to the temperature sensing element;

manually operable means, connected to the valve element, for effecting resetting movement of the valve element from its open position to its closed position against the influence of the urging means;



second latch means for holding the valve element in its closed position following resetting movement thereof when the temperature of the sensing element is below said predetermined level, said means responsive to the temperature sensing element also being operative to effect reengagement of said first latch means as the temperature of the sensing element increases while the valve element is held in its closed position by said second latch means; and

means responsive to the temperature of the temperature sensing element for automatically releasing said second latch means after the temperature of the temperature sensing element reaches the level at which the first latch means becomes operative to hold the valve means in its closed position.

4,438,778

MAXIMUM PRESSURE SELECTOR DEVICE

William R. Spencer, Springdale, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 2, 1981, Ser. No. 317,107
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—112 **15 Claims**

1. A maximum pressure selector device comprising:

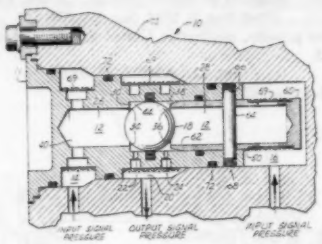
(a) a chamber;

(b) a spaced pair of inlet ports communicating with said chamber;

(c) a spaced pair of circular valve seats disposed between said inlet ports;

(d) an outlet port disposed between said valve seats and comprising a pair of spaced orifices communicating with said chamber, at least one of said orifices being of a predetermined cross-sectional area for allowing a predetermined maximum fluid flow rate therethrough for reducing surge flow between said inlet ports;

(e) a ball-shaped valving element disposed between said valve seats and being pressure actuatable toward alternate ones of said valve seats and having a stroke less than the distance between said orifices; and



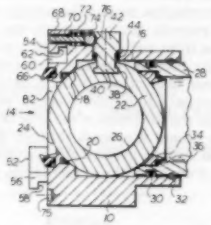
(f) sealing means comprising a resilient sleeve positioned about said ball positioned in said chamber about said valving element and being in sealing engagement therewith throughout the stroke thereof.

4,438,779

BALL VALVE COUPLING

Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Nov. 16, 1981, Ser. No. 321,433
Int. Cl.³ F16L *37/06*
U.S. Cl. 137—614.06 **5 Claims**



1. A coupling comprising, in combination, a first annular body having a passage defined therein having a longitudinal axis, said body having a conduit connection end for communicating with conduit means and a coupling end, said passage communicating with said conduit connection and coupling ends, a ball valve rotatably mounted within said passage, said ball valve including a spherical exterior surface and a diametrical bore extending through said valve, a valve actuator attached to said ball valve extending through said body having a manually operated handle exteriorly accessible of said body for selectively rotating said ball valve between an open position wherein said bore is in alignment with said passage axis and a closed position wherein said bore is tranversely disposed to said passage axis, an annular valve seat within said passage concentric to said passage axis sealingly engaging said ball valve exterior surface, first coupling attachment means defined upon said first body coupling end, a second annular body having a passage defined therein having a longitudinal axis, said second body having a conduit connection end for communicating with conduit means and a coupling end, said second body passage communicating with said second body conduit connection and coupling ends, second coupling attachment means defined upon said second body coupling end complementary in configuration to said first coupling attachment means and connectable thereto to a fully coupled condition to align said passages of said first and second bodies, first locking means defined upon said first body operatively connected to said valve actuator for selective movement between first and

second positions upon rotation of said ball valve between said open and closed positions, respectively, and second locking means defined on said second body alignable with and receiving said first locking means upon said first and second coupling attachment means being in the fully coupled condition permitting said first locking means to be shifted from said second position to said first position to permit said ball valve to be rotated from said closed position to said open position only upon said first and second bodies being fully coupled, said first body coupling end including a flat sealing surface perpendicularly disposed to the axis of said first body passage, said spherical valve exterior surface being substantially tangential to said sealing surface when said ball valve is in said closed position to minimize the volume of voids within said first body passage adjacent said sealing surface.

4,438,780

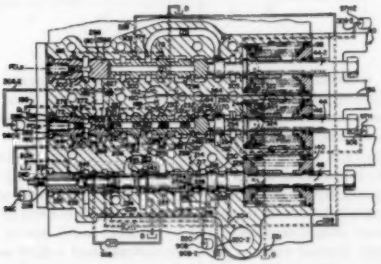
CLUTCH-CLUTCH-BRAKE STEERING MECHANISM FOR TRACTORS

Probir K. Chatterjea, Mt. Prospect, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 176,815, Aug. 11, 1980, Pat. No. 4,372,408, which is a continuation of Ser. No. 951,690, Oct. 16, 1978, abandoned. This application Oct. 22, 1982, Ser. No. 436,159

Int. Cl.³ F15B *13/06*

U.S. Cl. 137—625.6 **2 Claims**



1. Consolidated valving assembly means provided with high pressure, low pressure, and signal output conduits and controllably connecting the high and low pressure conduits to supply incrementally modulated pressure signals in ranges therebetween and unmodulated signals to the signal output conduits, said assembly means having:

a common bore (**190**) hydraulically disposed for communicating with said conduits;

independently slidable, multi positionable hydropotentiometer (**44**) and satisfied-metering spools (**226**) in the common bore for establishing therein signal and modulated pressures, respectively;

said hydropotentiometer spool having a 1st position constituting its home position and providing unmodulated pressure as an unmodulated 1st signal, a 2d position constituting a moved position and providing unmodulated pressure as a 2d signal which is unmodulatable unless the spool is further moved, and a 3d position constituting a further moved, braking range threshold, position and providing modulated pressure as a signal which is further modulatable to a 3d signal with additional spool movement to introduce the braking range when the 3d signal is inaugurated, all for collectively affording a series of 1st, 2d and 3d signals respectively supplied by the assembly means to the signal output conduits thereof;

first biasing means (**324**) associated with said bore along the line of travel of said hydropotentiometer spool, and being pre-loaded and having an end engaged by the just-said spool in said 1st position for unaugmented resistance to the spool to prevent it from discontinuing the 1st signal;

second biasing means (**322**) associated with said bore along the line of travel of said hydropotentiometer spool, and being pre-loaded and having an end engageable by the spool in a 2d position in a clutching range, for substantially augmented resistance to the spool to prevent it from modulating the 2d signal; and

third biasing means (**328**) associated with said bore along the line of travel of said hydropotentiometer spool, and being pre-loaded and having an end engageable by the spool in a 3d position at threshhold to a braking range, for fully augmented resistance to the spool to prevent it from inaugurating the 3d signal.

4,438,781

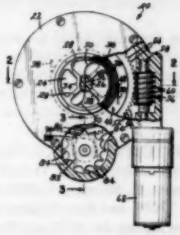
SPIRALLY WOUND FLOW CONTROL VALVE

David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Feb. 5, 1981, Ser. No. 231,688

Int. Cl.³ F16K *3/00, 37/00*

U.S. Cl. 137—625.28 **12 Claims**



1. A fluid flow control valve, comprising:

(a) a conduit member having an orifice formed therethrough, through which orifice a fluid can be conducted;

(b) a first axis extending through said orifice and being oriented substantially aligned with an intended direction of fluid conduction;

(c) an elongated control element having a portion thereof fixed at said first axis, an axial edge, and a remote end, said element being coiled about said first axis with said remote end disposed for revolution about said first axis selectively in opposite directions wherein, as said remote end is revolved in a first direction, said element is wound tightly radially inwardly toward said first axis so that said axial edge can form a substantially continuous surface occluding said orifice when a sufficient measure of compression is achieved; and

(d) means for imparting said selective revolving motion to said remote end.

4,438,782

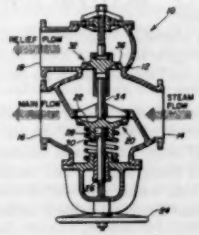
ISOLATION STEAM VALVE WITH ATMOSPHERIC VENT AND RELIEF CAPABILITY

Joseph E. Kelly, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 153,123, May 27, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,919

Int. Cl.³ F17D *1/06*

U.S. Cl. 137—628 **12 Claims**



1. An isolation steam valve arrangement for use between a

steam turbine exhaust and another piece of steam-using equipment, comprising:

a casing having an inlet and plural outlets;

said inlet adapted to be connected to the discharge side of the steam turbine;

one of the outlets adapted to be connected to another piece of steam-using equipment, and another of the outlet adapted to communicate to the atmosphere;

a main valve between the inlet and one outlet;

means for selectively controlling the main valve from fully open to fully closed for selectively passing turbine exhaust steam therethrough;

a normally spring-force closed relief valve between the inlet and said another outlet adapted to open in response to steam pressure at the inlet above a predetermined amount;

a normally spring-force closed vent valve between the inlet and another outlet; and

means operatively interconnecting the vent valve and main valve;

whereby, when the main valve is closed, the vent valve is positively open, thereby establishing open communication between the inlet and another outlet for allowing continuous steam venting to the atmosphere.

4,438,783

PROTECTIVE DEVICE FOR PIPES

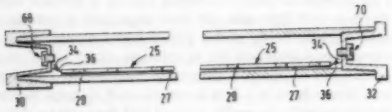
Wilfried Dreyfuss, Dorfstrasse 52, D-3111 Eimke, Fed. Rep. of Germany; Thomas E. Remp, Jr., 5555 Del Monte Dr. T-Z, Houston, Tex. 77056, and Kurt Müller, Eicklingen, Fed. Rep. of Germany, assignors to Wilfried Dreyfuss, Fed. Rep. of Germany and Thomas E. Remp, Houston, Tex.

Filed Apr. 9, 1982, Ser. No. 366,981

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114368; Apr. 9, 1981, 3114264

Int. Cl.³ F16L *55/24*

U.S. Cl. 138—89 **14 Claims**



1. A protective device for a longitudinal pipe having an interior comprising thread guards at the ends of the pipe, a rust guard and a moisture indicator, said rust guard being a dessicant substantially evenly distributed throughout said interior of said longitudinal pipe such that corrosion of said interior is prevented.

4,438,784

STOPPER FOR A SOURCE FOR AN X-RAY INSPECTION HOLE IN A PIPE OR OTHER APPARATUS

Jacques Bobichon, Verrieres le Buisson, and Pierre-Loup Leroy, Flines Lez Mortagne, both of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Jun. 2, 1982, Ser. No. 384,374

Claims priority, application France, Jun. 10, 1981, 81 11367

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—92 **2 Claims**

1. A stopper assembly for permitting inspection internally of a pipe or other apparatus by an X-ray inspection probe having access thereto, said stopper assembly comprising, in combination:

a hole within the wall of said pipe being threaded over at least a portion of its length from the outside of the pipe,

a cylindrical outer component having an external screw thread and being sized to and threadably engaging said threaded hole within said wall of said pipe,

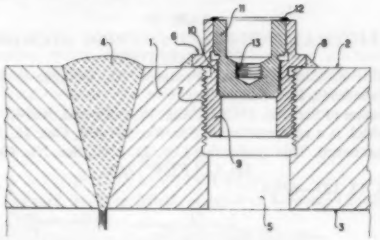
said cylindrical outer component including an inside screw thread,

and said outer cylindrical component being threaded to said threaded hole within said wall of said pipe to an extent where a portion of said cylindrical outer component projects outside of said hole,

said outer cylindrical component being welded to the outer surface of the wall of said pipe at an intermediate level where it projects outwardly from said hole,

a cylindrical inner component having a blind hole, and having an outside screw thread sized to said outer cylindrical component inside screw thread, said inner component being screwed into the inside screw thread of the outer component to the extent such that its outside end is radially flush with the outside end of said outer cylindrical component, and

a circumferential weld across the flush outside ends of the outer component and the inner component for fixedly joining the components,



and wherein said blind hole is equipped with means for allowing the inner component to be unscrewed from the outer component after the weld joining the outside ends of said components is rapidly ground off;

whereby, a high strength, effectively sealed stopper assembly is provided, and wherein the inner component may be repeatedly screwed back into the outer cylindrical component, fixed with its end radially flush with the end of the outer component and fixed by another weld across the flush outside ends of said components and which weld also can be readily ground off to permit repetitive access internally of the pipe by said X-ray inspection probe.

4,438,785

PIPE ENCLOSURE

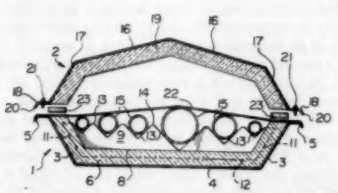
John D. Morrison, 12233 Lake Erie Rd. SE., Calgary, Alberta, Canada T2J 2Z3, and Robert McCheyne, 8307 - 161 St., Edmonton, Alberta, Canada

Filed Jul. 8, 1981, Ser. No. 281,560

Claims priority, application Canada, Jul. 10, 1980, 355875

Int. Cl.³ F16L *3/00*

U.S. Cl. 138—103 **8 Claims**



1. A pipe enclosure for use above ground comprising:

(a) an elongated casing, including

(i) a generally C-shaped, upwardly opening base defined by a bottom wall, upwardly and outwardly extending side walls, and outwardly extending flanges having downwardly turned edges on upper free ends of said side walls, and

(ii) a generally C-shaped, downwardly opening cover defined by a top wall, outwardly and downwardly extending side walls, and outwardly extending flanges having downwardly turned edges on lower free ends of

said side walls for engaging the correspondingly shaped flanges on said base to define a closed casing;

(b) means for releasably interconnecting said base and cover;

(c) insulation on the interior of said base and said cover, and

(d) first support means having a U-shaped cross section and supported by the insulation in said base and spaced from said base for supporting at least one pipe in said casing and spaced from said casing by said insulation.

4,438,786

KNIFE CONSTRUCTION FOR A DOUBLE-LIFT OPEN-SHED JACQUARD LOOM

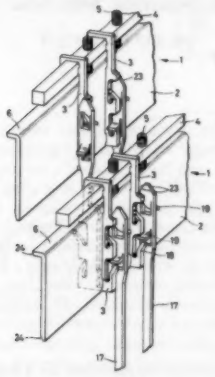
Heinz Königs, Krefeld; Hubert Kremer, Grefrath, and Hans-Theo Pieters, Krefeld-Hüls, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 343,679

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3106305

Int. Cl.³ D03C *3/00, 3/08*

U.S. Cl. 139—59 **19 Claims**



1. In a knife construction for a double-lift open shed Jacquard loom having two knives movable in opposite directions passing each other, the knives include a carrier member and at least one hook member fastened thereto, the hook member having spaced control hooks thereon, and a movable lifter member movable in said opposite directions having two main noses engageable with the control hooks of the hook member, the control hook and the main noses being inclined from the direction of movement of the lifter member to permit passage of the lifter member intermediate the control hooks of the hook member, the improvement wherein

the hook member is a stamping supported on and clamped to said carrier member and defines a longitudinal slot to receive the carrier member.

4,438,787

DEVICE FOR SELECTING THE HOOKS OF A WEAVING MECHANISM BY SUCCESSIVELY FEELING THE TWO HALVES OF A CARD OF THE JACQUARD TYPE

Ulrich Mutschler, 41A rue Pasteur, 69300 Caluire, France

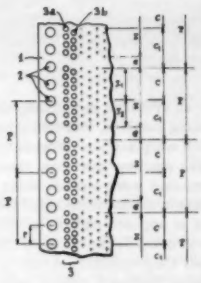
Filed Mar. 22, 1982, Ser. No. 360,733

Claims priority, application France, Apr. 14, 1981, 81 07650

Int. Cl.³ D03C *3/34, 15/04*

U.S. Cl. 139—329 **4 Claims**

1. An improved mechanism for intermittently advancing an endless Jacquard paper on a drum to pass beneath feeler needles controlling a loom and biased to read perforation patterns in the paper by passing through the perforations, the paper being divided longitudinally into transverse extending successive zones each constituting a standard perforated pattern card zone separated from adjacent card zones by non-perforated transverse zones, the improved mechanism being cooperative with a modified loom wherein the number of feeler needles is reduced to one half the number of needles for which the standard perforation pattern is designed and wherein the pattern of each card is advanced in two successive strokes and read in two successive half-zones by the reduced number of feeler needles, the advancing mechanism for driving the drum comprising:



(a) first means connected to be driven continuously in synchronism with the loom; and

(b) second means coupled to drive the drum and to be driven by said first means to rotate intermittently and alternately through two different angular motions respectively displacing the paper through two different successive strokes to bring the feeler needles into registry with the two half zones of each card.

4,438,788

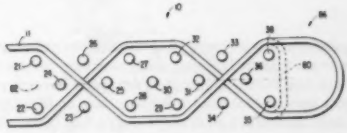
PAPERMAKERS BELT FORMED FROM WARP YARNS OF NON-CIRCULAR CROSS SECTION

William J. Harwood, Waycross, Ga., assignor to Scapa Inc., Waycross, Ga.

Continuation-in-part of Ser. No. 192,216, Sep. 30, 1980. This application Apr. 28, 1981, Ser. No. 258,047

Int. Cl.³ D03D *15/00;* **D21F** *7/10, 1/12*

U.S. Cl. 139—383 A **13 Claims**



1. A papermakers fabric comprising:

a first layer defined by a first plurality of weft yarns;

a second layer defined by a second plurality of weft yarns;

a plurality of stuffer picks; and

a plurality of warp yarns of non-circular cross section interwoven with said weft yarns to define a first surface on said first layer, a second surface on said second layer, and a plurality of stuffer pick receiving sheds interposed between said first and second layers, each shed for receiving at least one of said stuffer picks, a select number of said shed defining warp yarns extending out of a warp end of said fabric and being symmetrically rewoven into said fabric to produce a mirror image of itself when viewed with respect to the plane defined by said stuffer picks and to define a number of seam loops, one seam loop being formed by at least one of a preselected number of adjacent shed defining warp yarns.

4,438,789

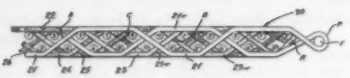
WOVEN PIN SEAM IN FABRIC AND METHOD

Donald G. MacBean, Ottawa, Canada, assignor to JWI Ltd., Kanata, Canada

Continuation of Ser. No. 270,341, Jun. 4, 1981, abandoned, which is a continuation-in-part of Ser. No. 214,738, Dec. 9, 1980, abandoned. This application Jun. 8, 1983, Ser. No. 502,132

Int. Cl.³ D03D *3/04*

U.S. Cl. 139—383 A **17 Claims**



1. A woven all-synthetic monofilament dryer fabric for use in a paper-making machine, said fabric being constituted by a belt woven with warp and weft strands with said warp strands extending in the machine direction, there being at least two weft layers and said warp strands being crimped relative to said weft strands in a non-symmetrical pattern, said belt being interconnected at opposed ends by a woven single pintle pin seam formed by reversely turned warp strands to constitute an endless belt, said warp strands in at least re-woven end portions of said belt being flattened strands with the original crimp configuration being changed in reversely turned portions of said reversely turned warp strands.

4,438,790

APPARATUS FOR GUIDING A FLUID MEDIUM DRIVEN WEFT THREAD IN THE SHED OF A LOOM AND USE OF THE APPARATUS AT A MULTIPLE LONGITUDINAL TRAVERSING SHED LOOM

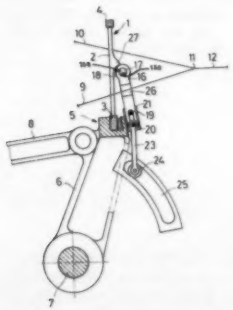
Alois Steiner, Rieden/SG, Switzerland, assignor to Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Mar. 9, 1981, Ser. No. 241,934

Claims priority, application Switzerland, Mar. 27, 1980, 2440/80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **10 Claims**



1. An apparatus for guiding a weft thread within the shed of a loom and which is driven by a flowing fluid medium, comprising:

two lamellae combs which are capable of dipping into and out of warp threads;

each of said lamellae combs comprising elastically structured lamellae elements;

each lamella element having a throughpass opening for guiding an inserted weft thread and a thread outlet opening;

said lamellae elements when assuming an operative position where they are immersed into the shed being interleaved with one anothr and forming by means of their throughpass openings a guide channel for the weft threads inserted in a predetermined weft insertion direction;

said guide channel being essentially continuous in the weft insertion direction;

said thread outlet openings of said lamellae elements, when in their operative position, being sealed and said guide channel also being continuously closed in radial direction; and

stop means operatively associated with said elastically structured lamellae elements in order to close said thread outlet openings during interleaving of both of said lamellae combs.

4,438,791

WEFT THREAD-SELECTION APPARATUS FOR A WEAVING MACHINE

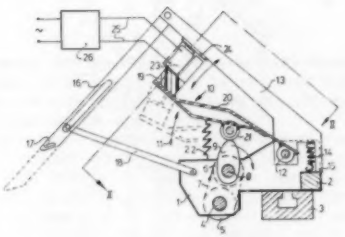
Gerhard Oesterle, Koblach, Austria; Rudolf Jaeger, Frasnacht, Switzerland; Wilhelm Hutter, Roggwil, Switzerland, and Elmar Zanol, Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer AG, Arbon, Switzerland

Filed May 24, 1982, Ser. No. 381,569

Claims priority, application Switzerland, Jun. 9, 1981, 3750/81

Int. Cl.³ D03D *47/38*

U.S. Cl. 139—453 **10 Claims**



1. A weft thread-selection apparatus for a weaving machine comprising:

a weft thread-infeed device operatively related to each weft thread to be inserted for bringing each such weft thread, prior to its insertion into a shed of the weaving machine, out of a preparatory position into a thread transfer position serving for the thread transfer to a weft thread-insertion device;

said weft thread-infeed device comprising weft thread-infeed rods;

a to-and-fro driven entrainment device with which there can be operatively connected the weft thread-infeed device by means of an electromagnetic control;

said entrainment device comprising an oscillatable support element which can be oscillated in cycle with a predetermined weft thread insertion frequency of the weaving machine;

said support element having a free end;

said free end of the support element carrying at least a first part of electromagnetic devices corresponding in number to the number of weft thread-infeed rods;

said support element having a further end;

a shaft at which there is rotatably mounted said further end of said support element;

oscillatable arm members;

said shaft simultaneously forming a pivot point for said oscillatable arm members;

spring means for retaining each of said oscillatable arm members in a preparatory position;

said oscillatable arm members each being hingedly connected at its free end with a related one of the weft thread-infeed rod; and

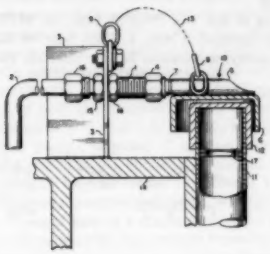
each of said oscillatable arm members carrying a further part

of the electromagnetic devices intended to be cooperatively coupled with a predetermined one of the first part of the electromagnetic devices.

4,438,792
PRESSURE RELIEF ALERT

George A. Timberlake, Jr., Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 28, 1981, Ser. No. 334,754
Int. Cl.³ B65B 3/04; B67C 5/32
U.S. Cl. 141—95 13 Claims



7. A pressure relief alert apparatus comprising:

(a) a tank containing a stored fluid at a pressure higher than atmospheric; (b) a pressure relief pipe having an inlet in communication with said stored fluid in said tank and an outlet; (c) means for discharging said stored fluid at a predetermined pressure through said pressure relief pipe; (d) a pressurized tube containing a control fluid in combination with a pressurized break-away tube assembly and a means for detachably connecting said pressurized tube to the break-away tube assembly wherein said pressurized tube is held rigidly immovable at a position in close proximity to said connecting means and said pressurized break-away tube assembly, and wherein said break-away tube assembly further includes a break-away tube open only at an end communicating with said connecting means, with a scored circumference located at a position exterior to said connecting means, but in close proximity thereto, when said pressurized break-away tube assembly is connected to said pressurized line tube; (e) a force plate attached to said break-away tube assembly and located over said relief pipe outlet, said force plate adapted to move in response to a release of fluid through said pipe; whereby a movement of said force plate in response to fluid release through said relief pipe breaks said break-away tube and releases said control fluid; and (f) means for detecting said release of said control fluid.

4,438,793
AERIAL REFUELING BOOM NOZZLE

Albert W. Brown, Newport Beach, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed May 4, 1981, Ser. No. 259,838
Int. Cl.³ B65B 3/04
U.S. Cl. 141—382 10 Claims

1. A nozzle for an aerial refueling boom comprising:

a housing having a fluid flow passage therethrough, said housing containing a solenoid including a coil and an armature movable parallel to the longitudinal axis of said housing between first and second positions;

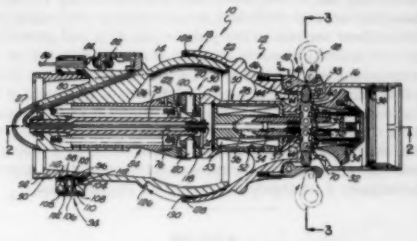
a pair of latches mounted in recesses on opposite sides of said housing outside of said flow passage each pivotable about an axis transverse to said longitudinal axis;

spring means normally biasing said latches inwardly into said recesses into a release position;

radially movable cam elements in said housing engaging the undersides of said latches;

means operatively connecting said cam elements and said armature;

in said first position of said armature said cam elements being



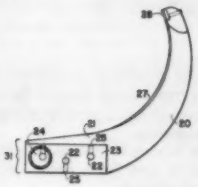
located in a retracted position allowing said latches to assume their release position; and

in said second position of said armature said cam elements being forced outwardly via said connecting means to an extended position pushing said latches outwardly from said recesses into a locking position.

4,438,794
BARK TOOL AND CONNECTION

Aaron R. Carpenter, Rte. One, Box 238, Chatom, Ala. 36518, and Robert R. Bagby, Rte. Two, Box 504-M, Pell City, Ala. 35125

Continuation-in-part of Ser. No. 56,319, Jul. 23, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 207,477
Int. Cl.³ B27L 1/00
U.S. Cl. 144—208 E 1 Claim



1. Apparatus for removal of bark from logs, comprising: a debarker rotor; at least one shaft attached to said rotor and mounted for rotation about the longitudinal axis of said shaft; a bark tool attached to said shaft, said bark tool having a connecting end portion and a tip portion at opposite ends thereof, said connecting end portion being located adjacent said shaft and being not substantially narrower than the greatest depth of the bark tool; said tip portion having means for debarking a log and being located at the outer end of said bark tool for the purpose of making contact with bark to be removed from a log; said bark tool being in the form of a crescent shaped plate of rigid metal, approximately one-quarter circle in relative configuration; said debarker rotor having moment inducing means for applying force through said shaft to the tip portion of said bark tool; said bark tool having a structural shape with moment resisting capacity increasing substantially linearly from the tip end to the connecting end of said bark tool, wherein structural capacity in resisting moment induced stresses is defined by the formula

$$\sigma = (M/S)$$

where σ is stress, M is the moment and S is the section modulus, which for rectangular section is determined by the formula

$S=(bd^2/6)$

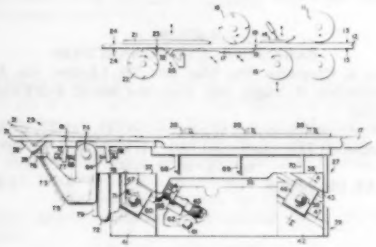
where b is the thickness of the member transverse to the plane of bending and d is the depth of the member in the plane of bending; said shaft having a shaft foot production connected thereto, said shaft foot portion being located adjacent the connecting end of said bark tool, said connecting end being connected to said shaft foot by at least one stud connector whose shear reaction in the plane of the bark tool provides a moment resisting capacity equal to or greater than that of the connecting end of said bark tool, said shaft foot being substantially thicker than the bark tool thickness and elongated in the direction of the bark tool, said stud connector being arranged along the elongated portion of the shaft foot and fixed therein, said shaft foot being connected to said shaft by connecting means having sufficient, moment resisting capacity to transmit the moment from the debarker rotor to the bark tool.

4,438,795

FLEXIBLE PLATEN PLANER

Irving L. Plough, Snohomish, Wash., assignor to Kimwood Corporation, Eugene, Oreg.

Filed Apr. 22, 1982, Ser. No. 370,689
Int. Cl.³ B27C 1/08
U.S. Cl. 144—373 **18 Claims**



1. An apparatus for holding a workpiece against a fixed platen during surface treatment of one side thereof by a surface treatment element spaced a first predetermined distance from said fixed platen comprising:

an elongated body having a workpiece contact surface extending parallel to said fixed platen and adjacent said surface treatment element;

means connected to one end portion of said elongated body remote from said surface treatment element for locating the workpiece contact surface a second predetermined distance from said fixed platen;

said elongated body having the other end thereof adjacent said surface treatment element free flexing for movement relative to said one end;

biasing means connected to said free flexing end for applying pressure thereto to bias said free flexing end against the workpiece to maintain contact between the workpiece and said fixed platen to accommodate variations in the thickness of the workpiece; and

means for driving the workpiece from said one end portion toward said free flexing end of said elongated body to effect surface treatment thereof.

18. A method for holding one side of a downstream-moving workpiece in constant contact with a stationary platen during surface treatment of the other side of the workpiece, comprising the steps of:

supporting one end of a semi-rigid elongated surface member in a fixed position a predetermined distance from said stationary platen;

providing a free flexing cantilevered end portion of said surface member, disposed downstream of said one end;

exerting a resilient bias against said cantilevered end portion to maintain contact between the one side of the workpiece and said stationary platen to accommodate variation in the thickness of the workpiece; and

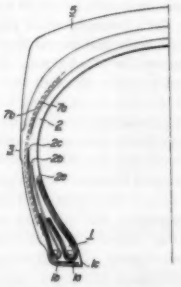
after the resilient bias has been exerted, effecting surface treatment of the workpiece.

4,438,796

PNEUMATIC TIRE FOR OFF-ROAD VEHICLES

Masaru Abe, Sayama; Isao Miyoshi, Kodaira; Toshiro Tezuka, Higashi-Murayama, and Toshio Yoshimoto, Akigawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 781,029, Mar. 24, 1977, abandoned.
This application Aug. 1, 1979, Ser. No. 62,868
Claims priority, application Japan, Mar. 26, 1976, 51-33266
Int. Cl.³ B60C 9/04, 9/20
U.S. Cl. 152—353 R **14 Claims**



1. A pneumatic tire for off-road vehicles comprising a reinforcing element composed of helically formed filaments and having an excellent side-cut resistant property, comprising a toroidal-shaped carcass body composed of a plurality of rubberized ply layers superimposed one upon the other and each containing organic fiber cords embedded therein, a side portion formed of a rubber coating made integral with both said carcass body and a tread portion, and a side portion reinforcing layer arranged in said side portion and for preventing cuts subjected to the surface of said side portion, said side portion reinforcing layer being composed of at least one rubberized layer containing a reinforcing element embedded therein and formed of 3 to 30 helically formed filaments, each filament having a diameter ϕ of 0.13 to 0.5 mm and made of material having a tensile breaking strength of at least 140 kg/mm^2, said reinforcing element having an elongation at tensile breaking strength which is 0.15 to 1.7 times that of organic cord of the ply of the carcass body, and said rubberized layer as a whole being extensible, wherein said reinforcing element has a ratio δ defined by

$$\delta = \frac{\{S - (D + d - \phi)\}}{S} = 0.11 \text{ to } 0.7$$

where S is a pitch in mm between midlines of the two adjacent reinforcing elements; d is an effective diameter in mm of the reinforcing element defined by

$$1.25 \times \sqrt{N} \times \phi$$

where N is the number of filaments for constituting the reinforcing element, ϕ is the diameter of a helically formed filament and D is the average diameter of an outer contour projected on a plane perpendicular to the axial direction of one pitch of a filament wherein, $D = D_{max} + D_{min}/2$ is in the range of 2ϕ–20ϕ.

2. A pneumatic tire for off-road vehicles comprising a reinforcing element composed of helically formed filaments and having an excellent side-cut resistant property, comprising a toroidal-shaped carcass body composed of a plurality of rubberized ply layers superimposed one upon the other and each containing organic fiber cords embedded therein, a side portion formed of a rubber coating made integral with both said carcass body and a tread portion, and a side portion reinforcing layer arranged in said side portion and for preventing cuts subjected to the surface of said side portion, said side portion reinforcing layer being composed of at least one rubberized layer containing a reinforcing element embedded therein and formed of a helically formed filament bundle of 3 to 30 helically formed filaments assembled together without twisting at random, each filament having a diameter ϕ of 0.13 to 0.5 mm and each made of material having a tensile breaking strength of at least 140 kg/mm^2, said reinforcing element having an elongation at tensile breaking strength which is 0.15 to 1.7 times that of organic cord of the ply of the carcass body, said reinforcing element has a ratio δ defined by

$$\delta = \frac{\{S - (D + d - \phi)\}}{S} = 0.11 \text{ to } 0.7$$

where S is a pitch in mm between midlines of the two adjacent reinforcing elements; d is an effective diameter in mm of the reinforcing element defined by

$$1.25 \times \sqrt{N} \times \phi$$

where N is the number of filaments for constituting the reinforcing element, ϕ is the diameter of a helically formed filament and D is the average diameter of an outer contour projected on a plane perpendicular to the axial direction of one pitch of a filament wherein, $D = D_{max} + D_{min}/2$ is in the range of 2ϕ–20ϕ and said rubberized layer as a whole being extensible, said reinforcing layer extending from the crown portion of the tire to a region above the bead region of the tire at a position above the point at which the upper edge of a rim on which the tire is mounted meets the tire.

4,438,797

SEAL FOR A MULTIPIECE WHEEL ASSEMBLY

David S. Suckow, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00335, § 371 Date Mar. 19, 1982, § 102(e) Date Mar. 19, 1982, PCT Pub. No. WO83/03228, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 19, 1982, Ser. No. 375,113

Int. Cl.³ B60B *25/18*

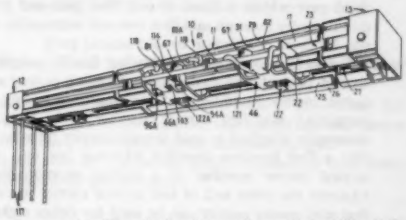
U.S. Cl. 152—410 **6 Claims**

1. A multiple-piece tire rim assembly (16) for mounting and sealing a tubeless tire (10), said tire rim assembly (16) comprising:

an annular rim base (18) having an axial center line (19) and an outer periphery (30) defining first and second grooves (32,34), said first groove (32) located in an axially outer portion of the outer periphery (30) of the rim base (18) and having a depth greater than said second groove (34), said second groove (34) defining a bottom surface and being located axially inward of said first groove (32), said bottom surface having a uniform diameter and opening into an inner side of said first groove (32);

an annular bead seat member (24) disposed radially outside said rim base (18) and having an inner periphery (38) radially adjacent said outer periphery (30) of said rim base (18), said inner periphery (38) defining an inner surface (40), a load transferring surface (42), and an inclined ramp surface (44) located between said inner surface (40) and said load transferring surface (42), said load transferring surface (42) extending radially outwardly and upwardly from said inclined ramp surface (44), said load transferring surface (42) and said inclined ramp surface (44) being respectively radially adjacent said first and second grooves (32,34);

an annular split lock ring (28) having a first portion (46) disposed in axially restraining engagement with said first groove (32) and a second portion (50) in load transferring



engagement with said load transfer surface (42) of the bead seat member (24); and

an annular elastomeric seal (26) having a cross section less than the width and depth of the first groove and being disposed in said second groove (34) in axial abutment with the lock ring (28), said annular elastomeric seal (26) being in sealing compression with said second groove (34) by said inclined ramp surface (44) only when the first portion (46) of the lock ring (28) is fully seated in the first groove (32) and said load transferring surface (42) of the bead seat member (24) is in contact with the lock ring (28) said annular elastomeric seal (26) freely moves from the second groove (34) to the first groove (32) during attempted inflation of the tubeless tire (10) in the event the lock ring (28) is omitted during assembly thus ensuring that the tire cavity does not retain any air pressure during the attempted inflation.

4,438,798

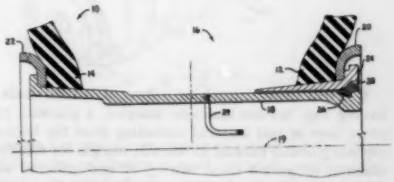
MASTER CARRIER FOR A TRAVERSE ROD

James A. Ford, and Steven R. Haarer, both of Sherman Township, St. Joseph County, Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 2, 1981, Ser. No. 298,553

Int. Cl.³ A47H *1/00*

U.S. Cl. 160—126 **14 Claims**



1. In combination, a horizontally elongated drapery rod having wall means defining first and second side-by-side paral-

lel channels extending lengthwise of said rod, said wall means also defining first and second elongated slots extending lengthwise of said rod and respectively communicating with said first and second channels, said first channel being disposed adjacent the front side of said rod and said first slot opening downwardly from said first channel, a master carrier slidably supported on said rod for movement lengthwise therealong, and elongated flexible propelling means housed within said second channel and extending therealong for connection to said master carrier to effect slidable movement thereof along said rod, the improvement wherein said master carrier comprises:

first and second carrier members which are separate from one another and are slidably supported in said first and second channels, respectively;

said first carrier member having a first part which is slidably supported within said first channel and a second part which is releasably but fixedly connected to said second carrier member, said first carrier member also having a third part which is fixed to said first part and projects downwardly through said first slot and rearwardly of said rod for fixed connection to said second part;

first fastening means for releasably but fixedly coupling the second part of said first carrier member to said second carrier member, said first fastening means including means permitting said first carrier member to be fixedly but releasably attached to said second carrier member at either a first location disposed adjacent one end of said second carrier member or a second location disposed adjacent the other end of said second carrier member so that said master carrier can be used for either right-hand or left-hand operation;

means defining a passageway extending transversely through said first carrier member for permitting said elongated flexible propelling means to extend therethrough; and

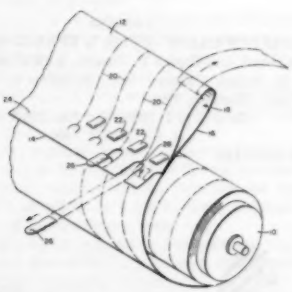
second fastening means on one of said first and second carrier members for permitting attachment of said propelling means thereto.

4,438,799

TEAR STARTING MECHANISM FOR TEAR SHADES

Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Filed Apr. 21, 1982, Ser. No. 370,595
Int. Cl.³ A47G 5/02
U.S. Cl. 160—263 **6 Claims**



1. A tear shade comprising a sheet of flexible shade material having top, bottom and side margins, a plurality of spaced score lines in said material extending from the bottom to the top margins and parallel to one side margin for weakening said material to permit hand tearing of said material along any selected one of said score lines whereby to reduce the width of said shade to a selected degree, the bottom margin folded upwardly to form a pocket along the bottom of the shade, means sealing the shade material of the pocket to itself between the spaced score lines on a line parallel to the bottom margin and substantially inwardly of the bottom margin to form a free flap of said material, spaced perforations in said flap along a line parallel to the bottom margin forming pull-tabs bridging each score line between the bottom margin and the line of said sealing means, the configuration of said perforations providing said tabs with a wide base nearest to said bottom margin narrowing to an apex at the respective score lines whereby pulling said tabs toward said bottom margin to tear said material leaves an opening along said bottom margin which terminates at an apex located at a score line thereby permitting the remaining part of said flap on the side of said opening toward said one side margin of the shade to be pulled so as to start tearing the shade material along a selected score line.

4,438,800

SURFACE DEFINING SLATS AND ARTICLES UTILIZING SAME

Clayton J. Hemmerle, 116 NE. 16th Ct., Ft. Lauderdale, Fla. 33305, and Richard A. Basinger, 6313 SW. 26th St., Miramar, Fla. 33023

Filed Feb. 25, 1982, Ser. No. 352,102
Int. Cl.³ E06B 3/30
U.S. Cl. 160—371 **30 Claims**

1. A slat adapted to being securely positioned between opposing support members capable of defining at least one surface when a plurality of slats are positioned therebetween, said slat comprising surface defining means including top and bottom surfaces for defining a portion of said at least one surface, said surface defining means having two generally opposing ends, each of said ends including attachment means defining a substantially closed cavity for receiving a portion of one of said support members, and biasing means for providing a bias force thereby biasing said attachment means to a normal substantially closed position and for allowing access to said cavity upon application of a force in a direction generally opposing said bias force.

4,438,801

PROCESS AND APPARATUS FOR THE TRANSPORT OF A TRAIN OF FLASKLESS CASTING MOLDS

Eugen Bühler, Schleifweg 3, 8877 Burtenbach, Fed. Rep. of Germany

PCT No. PCT/DE81/00041, § 371 Date Oct. 23, 1981, § 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/02698, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 9, 1981, Ser. No. 315,532
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011265; May 29, 1980, 3020349
Int. Cl.³ B22D 47/02
U.S. Cl. 164—130 **18 Claims**

1. A process for the transport of a mold train of flaskless molds on movable transporting structures along storing, teeming and cooling stations in a foundry and having at least one straight conveyor run on which said transporting structures are supported, new teeming molds joining, one after the other, a back end of the mold train and filled molds being taken therefrom at the same rate from a front end of the train, comprising the steps of:

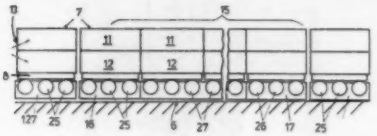
(a) lining up said molds in said mold train with their end

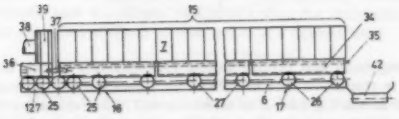
faces resting against each other, said molds having upright end and side faces normal to the conveyor plane;

(b) transporting said mold train by speeding up and braking forces adjusted as necessary and as needed, said speeding up force taking effect at the back end of said mold train and said braking force taking effect at the front end thereof; and

(c) transmitting said forces together with any forces acting against thermal expansion within said mold train along the full length of the mold train only by said molds, from one mold to the mold next thereto.

8. Apparatus for casting including flaskless molds and a conveyor for transporting a mold train of said flaskless molds along storing, teeming and cooling stations and having at least





one straight conveyor run, new teeming molds joining, one after the other, a back end of the mold train and filled molds being taken therefrom at the same rate from a front end of the train, wherein said conveyor stretches from a mold-producing station to a shake-out station and includes turning supports turning about fixed axes, and said conveyor including transport structures for supporting one or more molds having a length in the transport direction smaller than the length of the mold or molds placed thereon, said mold or molds stretching out to the back and front of each such transport structure, and said transport structures placed at one of the front or back ends of one run of the mold train are geared with a driving unit and at the other end with a braking unit by means of at least one adjustable torque limiting slip clutch.

4,438,802

CONTINUOUS CASTING WITHDRAWAL APPARATUS

Evgeny A. Korshunov, pereulok Otdelny, 5a, kv. 29, Sverdlovsk; Maxim B. Ovodenko, ulitsa Gorkogo, 19, kv. 5, Krasnoyarsk; Alexandr N. Kuznetsov, prospekt Mira, 118, kv. 49, Krasnoyarsk; Gennady G. Kuzmin, ulitsa Lebedevoi, 147a, kv. 9, Krasnoyarsk; Valery P. Kostrov, ulitsa Bozhova, 57, kv. 10, Sverdlovsk; Alexandr N. Timofeev, ulitsa Kachinskaya, 60a, kv. 3, Krasnoyarsk; Tatyana V. Meschaninova, ulitsa Malysheva, 127a, kv. 21, Sverdlovsk, and Valery L. Bastrikov, ulitsa Malysheva, 127a, kv. 21, Sverdlovsk, all of U.S.S.R.

Filed Nov. 18, 1981, Ser. No. 322,700

Int. Cl.³ B22D *11/124, 11/128*

U.S. Cl. 164—443 **2 Claims**

1. An apparatus for withdrawing a casting from a mould of a continuous metal casting plant, comprising:

(a) a movable housing;

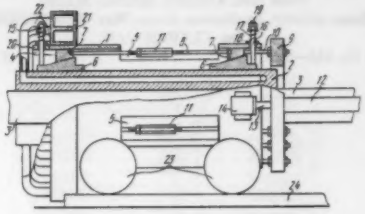
(b) cooled shoes disposed along the perimeter of said casting and located within said housing;

(c) two pairs of wedges disposed between each said shoe and said housing; one wedge of each of said pair of wedges being rigidly secured on said shoe; the other wedge of said pair being disposed in a recess in said housing for movement relative to said housing and said one wedge;

(d) a member adjustable in length connecting the other wedges of each of said two pairs of wedges with each other;

(e) means for withdrawing said casting from said mould, said withdrawing means including hydraulic cylinders with rods for withdrawing said casting from said mould;

(f) means for pressing said shoes against said casting, said



pressing means including hydraulic cylinders with rods for pressing said shoes against said casting;

(g) a crossbar connected with said rods of said means for withdrawing said casting from said mould and said means for pressing said shoes against said casting; and

(h) a member of a constant length connecting said other wedges with said crossbar.

4,438,803

CONTINUOUS CASTING OF STEEL SLABS AND BLOOMS FREE FROM SURFACE DEFECTS

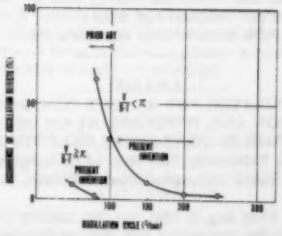
Hidemaro Takeuchi; Shogo Matsumura; Ryoichi Hidaka; Yasunobu Ikehara, all of Yamaguchi, and Tsuyoshi Saeki, Fukuoka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,982

Claims priority, application Japan, Apr. 4, 1980, 55-43628; Feb. 3, 1981, 56-14647

Int. Cl.³ B22D *11/04, 11/07*

U.S. Cl. 164—472 **5 Claims**



1. A process for continuous casting of a steel slab free from surface defects by oscillating a mold vertically with a sine-curved stroke, in which the maximum downward movement speed of the mold is larger than the strand withdrawal speed, and the mold is oscillated with an oscillation cycle not less than 110 C/min, and an oscillation stroke with a range of from 3 mm to 10 mm.

4,438,804

WATER SOLUBLE CORES AND METHOD FOR MANUFACTURING CAST ROTOR PROVIDED WITH VENTILATION DUCTS UTILIZING THE CORE

Toshiro Aiga, and Toshiaki Maeda, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1981, Ser. No. 321,088
Claims priority, application Japan, Nov. 20, 1980, 55-162591
Int. Cl.³ B22C 1/18
U.S. Cl. 164—522 7 Claims

1. A water soluble core comprising a mold product prepared from a mixture consisting essentially of a sand in an amount of 100 parts by weight, a first binding agent of potassium carbonate in an amount of 10–50 parts by weight, and a second binding agent selected from the group consisting of at least one of barium carbonate in an amount of 1–50 parts by weight and 1–15 parts by weight of alkali silicate, and wherein said water soluble core is prepared by kneading a mixture of said sand, said first and second binding agents, and 5–20 parts by weight of water based on 100 parts by weight of said sand and said water soluble core is dried after molding.

6. A method of manufacturing a cast rotor of an induction motor comprising the steps of preparing a plurality of water soluble cores each comprising a mixture consisting essentially of sand in an amount of 100 parts by weight, a first binding agent of potassium carbonate in an amount of 10–50 parts by weight, and a second binding agent selected from the group consisting of barium carbonate in an amount of 1–50 parts by weight and alkali silicate in an amount of 1–15 parts by weight, each of said water soluble cores being provided with a shaft hole and a plurality of conductor slots, interposing said water soluble cores between adjacent laminated core blocks each having a shaft hole and a plurality of slots corresponding to those of said water soluble cores so as to align said water soluble cores and said laminated core blocks to form a laminated assembly, positioning said laminated assembly in a casting mold, pouring electrically conductive molten metal into said casting mold to form conductors, circuit rings, and cooling fins of said cast rotor, and treating with, by water, a cast product taken out from said cast mold thereby to disintegrate said water soluble cores to form ventilation ducts.

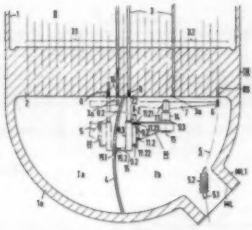
4,438,805

MANIPULATOR FOR REMOTE-CONTROLLED INSPECTION AND, IF NECESSARY OR DESIRABLE, REPAIR OF HEAT EXCHANGER TUBES

Georg Gugel, Kalchreuth, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,153
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029811
Int. Cl.³ F28G 15/02
U.S. Cl. 165—76 5 Claims

1. Manipulator for positioning a tube probe at tube mouths of heat-exchanger tubes by remote-control of the tube probe which is connected to a flexible supply line and provided for inspecting and/or repairing the heat-exchanger tubes, the tube mouths being disposed in a tube sheet and extending over an approximately semicircular tube field defined by a chord, the manipulator including a rigid carrying body disposed parallel to the tube sheet, the carrying body having a linear track, a support disposed parallel to the tube sheet and mounted on the carrying body so as to extend away therefrom in the direction of the tube sheet, said support being displaceably mounted on the track along the carrying body, a boom mounted on a bearing surface of the support facing towards the tube sheet, the boom being pivotable in a plane parallel to the tube sheet, and a mouthpiece disposed at a free end of the boom and being movable therewith for introducing a tube probe into a respective heat-exchanger tube, said carrying body comprising at least three clamping devices distributed over the length of the



carrying body and being lockable independently of one another in respective tube mouths of the tube sheet, said clamping devices being formed as insertable and retractable expanding mandrels extending from the carrying body towards and spacing the body from the tube sheet, the boom having a swivel head by which it is fastened to a rotary shaft of a swing drive seated on the bearing surface of the support facing towards the tube sheet, the mouthpiece being spaced from said rotary shaft a distance greater than a perpendicular distance of said rotary shaft from the chord defining the approximately semicircular tube field, the mouthpiece being thereby pivotable with the boom into the space between the carrying body and the tube sheet for introducing the tube probe into the respective tube mouths located thereat.

4,438,806

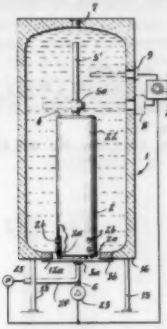
HEAT EXCHANGER FOR TRANSFERRING HEAT TO A LIQUID

Dieter Kaehler, Berlin, Fed. Rep. of Germany, assignor to Alfa-Laval Agrar GmbH, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 105,769, Dec. 20, 1979, Pat. No. 4,305,454. This application Aug. 14, 1981, Ser. No. 292,816
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854999
Int. Cl.³ F24H 1/20; F28D 1/04
U.S. Cl. 165—108 13 Claims

1. A heat exchanger for transferring heat from a warmer medium to a liquid to be heated, comprising a substantially upright insulated jacket defining an internal space containing the liquid to be heated; a hollow heat conducting body disposed in the interior of said jacket and arranged to guide the liquid to be heated; a heating body traversed by the warmer medium and at least paritally surrounded by said heat conducting body, said heat conducting body separating the liquid which is heated in the interior thereof as a result of heat exchange with the warmer medium in said heating body from the liquid in the internal space of said jacket and said heat conducting body having a lower end provided with an inlet opening for admission of liquid to be heated from said internal space and an upper end provided with a flow restrictor defining an outlet opening for the liquid which is heated in the interior of and rises in said heat conducting body, said heat conducting body and said flow restrictor having thermally insulating walls; a thermometer for sensing the temperature of liquid in

said jacket; means for adjusting said flow restrictor; an electric heater for heating the liquid in the jacket; a thermostat for controlling the heater; a first pump for admitting liquid into said heat conducting body; a second pump for admitting warm



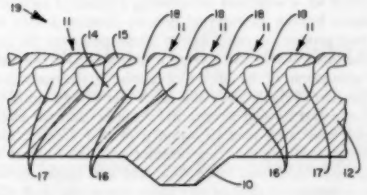
medium into said heating body; and control means operatively connected to said thermometer, said adjusting means, said heater, said thermostat and said pumps for maintaining the temperature of liquid in said jacket at a desired level.

4,438,807

HIGH PERFORMANCE HEAT TRANSFER TUBE

Achint P. Mathur, Clay; Matti J. Torniainen, and James P. Shawcross, both of Chittenango, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,901
Int. Cl.³ F28F *19/00*
U.S. Cl. 165—133 **2 Claims**



1. A heat transfer tube for transferring heat between a boiling liquid in contact with the exterior surface of the tube and a fluid flowing through the tube, comprising:

at least one helically extending rib on the interior surface of the tube; and

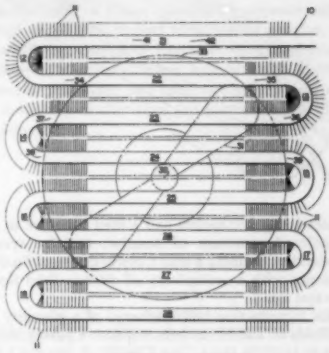
at least one helically extending fin convolution extending around the exterior of the tube, said fin convolution having a base portion extending generally radially outward from the exterior surface of said tube and having a tip portion inclined toward the side of the adjacent convolution to form a channel of substantially uniform cross-section extending around the tube with the sections of the fin convolution not located approximately above an internal rib having their tip portions touching the adjacent convolution to form closed subsurface passages which fluidically communicate with the surroundings of the tube substantially only through cavities having openings located at the sections of the fin convolution located approximately above an internal rib where depressed tip portions of the fin convolution do not touch the adjacent convolution whereby a pattern of closed and open section are formed on the exterior surface of the tube.

4,438,808

HEAT EXCHANGER TUBE

Herbert J. Venables, III, and Herbert J. Venables, IV, both of Shaker Blvd., Hunting Valley Village, Chagrin Valley Post Office, Ohio 44022

Continuation of Ser. No. 16,799, Mar. 2, 1979, abandoned. This application Apr. 7, 1981, Ser. No. 251,882
Int. Cl.³ F28F *1/36*
U.S. Cl. 165—150 **6 Claims**



1. A heat exchanger system comprising a heat exchanger operable to transfer heat between two fluids and means to cause a flow of one of said fluids over said heat exchanger as a stream of said one fluid having a substantially predetermined pattern, the flow rate over the first portions of said heat exchanger in alignment with said pattern being substantially greater than the flow rate over the second portions of said heat exchanger outside of said pattern, said heat exchanger including a substantially smooth tube and a continuous separate strip of spine fins having separate and distinct spines extending radially from at least one edge of a continuous uninterrupted base portion, said base portion being helically wound around said tube under tension causing stretching of only the base portion of said strip of spine fins, a plurality of bends in said second portions, said tube providing a plurality of separate passes through said stream of said one fluid, said spine fins being wrapped along said plurality of said passes with a predetermined small helix angle and providing a uniform high spine density along said first portions of said heat exchanger and with a greater helix angle providing uniform lower spine density along at least part of said second portions of said heat exchanger containing said bends, said spine fins being wrapped around said tube with a substantially uniform amount of material provided in each wrap of said spine fin along the entire length of said tube, said spine fins along said at least part of said second portions being stretched a greater amount than along said first portions of said heat exchanger.

4,438,809

TAPERED PLATE ANNULAR HEAT EXCHANGER

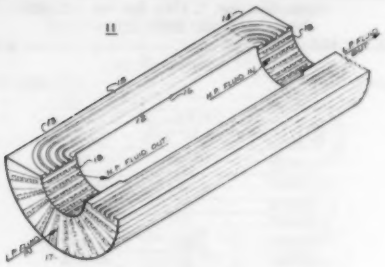
Thaddeus Papis, 10115 Victoria Ave., Riverside, Calif. 92503

Filed Aug. 1, 1980, Ser. No. 174,362
Int. Cl.³ F28F *3/08*
U.S. Cl. 165—166 **6 Claims**

1. A heavy duty annular heat exchanger with multiplicity of parallel, essentially axial fluid passageways of small cross-section for heat transfer between a plurality of fluids in a high pressure environment, comprising:

a multiplicity of solid plates, in plurality of distinct sets, each said plate having a tapered cross-section taken in a plane perpendicular to the longitudinal axis of the heat exchanger, said plates being selectively provided with a multiplicity of essentially parallel, longitudinally disposed

grooves of relatively small cross-section for defining fluid passages, wherein grooves adjacent plate edges define therewith land areas serving as primary plate joining surfaces and interior grooves define therebetween heat transfer fins which also serve as load carrying members;



said plates being juxtaposed and joined together to form a self-enclosed structure of annular, radially symmetric cross-section, defining a heat transfer core and fluid transition zones with a multiplicity of distinct fluid flow passageways; and

means for introduction and discharge of a plurality of distinct fluids to and from their respective passageways.

4,438,810

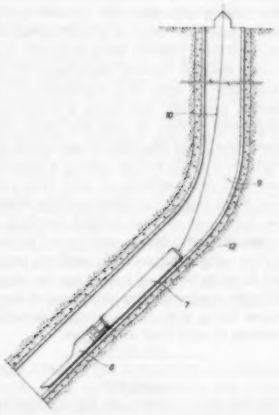
APPARATUS FOR DECENTRALIZING AND ORIENTING A WELL LOGGING OR PERFORATING INSTRUMENT

Gregory J. Wilkinson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 26, 1981, Ser. No. 314,821

Int. Cl.³ E21B *43/119*

U.S. Cl. 166—65 M **6 Claims**



1. An apparatus for orienting a logging or perforating instrument supported by a cable and disposed within a cased borehole to the lower side of said borehole, comprising;

an elongated body member having a first end portion of generally circular lateral cross-section adapted to attach to said instrument;

said body member having an elongated portion wherein the mass of said body member exhibits a generally truncated circular lateral cross-section, said truncated circular lateral cross-section being predominantly disposed to one side of the longitudinal axis of said body member;

said body member having one or more longitudinal recesses within said elongated portion said longitudinal recesses generally centered upon the curvilinear portion of said truncated circular lateral cross-section of said body member; and

one or more permanent magnets cooperatively arranged within said recesses.

4,438,811

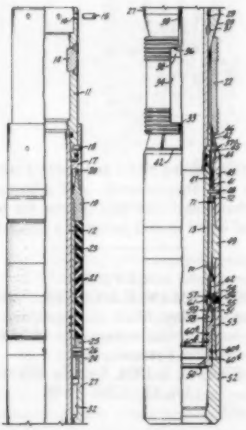
LATCH FOR USE IN A WELL

Dhirajlal C. Patel, Carrollton, Tex., assignor to Otid Engineering Corporation, Dallas, Tex.

Filed Aug. 16, 1982, Ser. No. 408,455

Int. Cl.³ E21B *23/06*

U.S. Cl. 166—123 **12 Claims**



1. A latch for a well tool comprising, a mandrel including a latch sleeve having an external groove therein, a split latch ring in said groove, an outer sleeve telescoped over the lower end of the latch sleeve and having a stop shoulder preventing upward movement of the latch ring relative to the outer sleeve, a ring retainer slidable over the latch sleeve and within the outer sleeve and having an internal retainer land for engagement with said latch ring to retain it in said groove, means releasably positioning said ring retainer with the retainer land in engagement with said latch ring, and seal means between said ring retainer and each of said outer sleeve and latch sleeve to provide fluid integrity between said latch sleeve and said outer sleeve.

4,438,812

BRUSH TOOL FOR WELLS

Donald P. Hammon, 75 E. Mountain View St., Long Beach, Calif. 90805

Filed Aug. 23, 1982, Ser. No. 410,815

Int. Cl.³ F21B *41/00*

U.S. Cl. 166—173 **5 Claims**

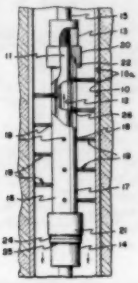
1. A brush tool for wells including, in combination:

(a) a mandrel for insertion in a well pipestring, said mandrel having a central bore for maintaining well fluid circulation during a brushing operation;

(b) first and second semi-cylindrical sections, each having a plurality of holes along its length;

(c) brush means radially extending through said holes, said first and second sections being dimensioned to surround said mandrel in coaxial relationship when brought together from opposite sides of said mandrel so that the inner ends of the brush means are held secure between the outer wall of the mandrel and the inner walls of the first and second semi-cylindrical sections, said brush means

including a brush bundle for each hole comprising a rivet shaped collar and a plurality of wires passing through the collar to make up the brush bundle, said rivet-shaped collar having a cylindrical portion dimensioned to be snugly received in said hole and of an axial length sufficient to hold the wires in a bundle and a radially extending exterior flange at one end overlapping the entrance periphery of the hole, said plurality of wires having their inner ends bent laterally to overlie said flange, said flange and bent wires being trapped between the outer wall of



said mandrel and the inner cylindrical wall of the semi-cylindrical section through which said hole passes so that all the brush bundles are securely held on said mandrel, said rivet shaped collar further preventing direct contact of said wires with said holes to thereby minimize wear on said holes; and

(d) ring means receivable over the ends of said mandrel to engage about the opposite ends of the semi-cylindrical sections and thereby hold them together about said mandrel whereby rapid assembly and disassembly of the brush means over the length of said mandrel can be realized.

4,438,813

DEVICE FOR APPLYING PLUGGING MIX TO WELL WALLS

Nikolai I. Nikolaev; Lev A. Tereschenko; Arian M. Yakovlev; Vitaly I. Kovalenko, all of Leningrad; Nikolai K. Lipatov, Murmanskaya; Ruben A. Tatevosian, and Mikhail Y. Titov, both of Moscow, all of U.S.S.R., assignors to Proizvodstvennoe Geologicheskoe Obiedinenie "Tsentrogeologia", Moscow, U.S.S.R.

Filed Jan. 27, 1982, Ser. No. 343,284

Claims priority, application U.S.S.R., Mar. 25, 1981, 3257101

Int. Cl.³ E21B *33/138*

U.S. Cl. 166—177 **3 Claims**

1. A device for applying plugging mix to well walls to be installed in a drilling string comprising: a piston of a diameter which is slightly smaller than the nominal inside diameter of said drilling string; passages for the flow of a fluid in said piston; spring-biased locking members for fixing the position of said device with respect to said drilling string, installed on said piston; a head installed coaxially with said piston and rigidly coupled thereto; passages for the flow of the fluid in said head communicating with said passages of said piston; vanes for applying a plugging mix to walls of said well, said vanes being made in the form of plates installed on opposite sides in said head at an angle with respect to its axis of rotation, the vanes being radially movable with respect to the axis of rotation; a bit for drilling-off the plugging mix, said bit being installed at the distal end of said head; said head and bit being of a diameter which is slightly smaller than the nominal inside diameter of said drilling string.

4,438,814

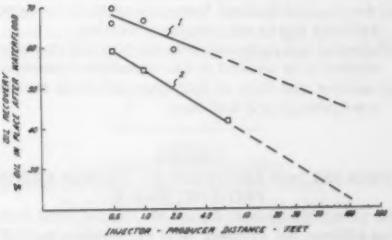
OIL RECOVERY METHOD EMPLOYING ALTERNATE SLUGS OF SURFACTANT AND FRESH WATER

Issam S. Bousaid, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 193,323, Oct. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 71,211, Aug. 30, 1979, abandoned. This application Aug. 25, 1982, Ser. No. 411,172

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—273 **15 Claims**



1. A method of recovering petroleum from a subterranean, petroleum-containing, permeable formation penetrated by at least one injection well and by at least one production well, said formation containing water having a salinity in excess of about 20,000 parts per million total dissolved solids, comprising injecting into the formation a predetermined volume of an aqueous surfactant fluid, said surfactant being slightly soluble in a fluid having a salinity of from 50 to 100 percent of the salinity of the water present in the formation, and reducing interfacial tension between the petroleum and water to a value less than 100 millidynes/centimeter, said surfactant fluid being injected by the injection well and displacing petroleum in the formation toward the production from which it is recovered to the surface of the earth, wherein the improvement comprises:

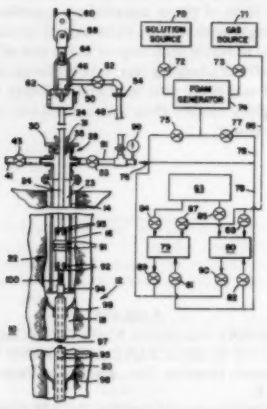
injecting the surfactant fluid into the formation in from 2 to 15 separate slugs, and separating successive slugs of surfactant fluid from one another by injecting sequentially therewith, separate isolation slugs consisting essentially of fresh water having salinity less than 10,000 parts per million total dissolved solids, the volume of each isolation slug being less than 0.5 pore volume.

4,438,815

FOAM GRAVEL PACKING

Thomas D. Elson, Chino, and Ralph S. Millhone, Brea, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 23, 1981, Ser. No. 323,787
Int. Cl.³ E21B 43/04
U.S. Cl. 166—278 6 Claims



1. A method for packing particulate material in a well bore subsurface location comprising the steps of:

(a) generating a stable foam material at the surface above said well;

(b) injecting said foam through said particulate material from below to produce a foam-particulate mixture and to fluidize said mixture of foam and particulate material;

(c) forcing said fluidized foam-particulate mixture into said well bore and to said subsurface location;

(d) causing said particulate material of said foam-particulate mixture to be retained at said subsurface location; and

(e) moving said foam of said foam-particulate mixture upward through said well bore.

4,438,816

PROCESS FOR RECOVERY OF HYDROCARBONS FROM OIL SHALE

Peter Urban, Northbrook; Russell W. Johnson, Villa Park, and Lee Hilfman, Mt. Prospect, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 13, 1982, Ser. No. 378,024
Int. Cl.³ C10G 1/04; E21B 43/24
U.S. Cl. 166—303 16 Claims

1. A process for the recovery of hydrocarbons from oil shale containing said hydrocarbons which comprises:

(a) first heating said oil shale in the presence of a non-combustion supporting, non-oil miscible gas selected from the group consisting of nitrogen, hydrogen sulfide, ammonia, mercaptan, hydrocarbon, sulfur dioxide, carbon monoxide, carbon dioxide, water and mixtures thereof at subcritical conditions of said selected gas and at a temperature of from about 650° F. to about 825° F. to produce a solvent extractable material and to liberate at least a first portion of said hydrocarbon contained therein;

(b) recovering said solvent extractable material and said first hydrocarbon portion; and

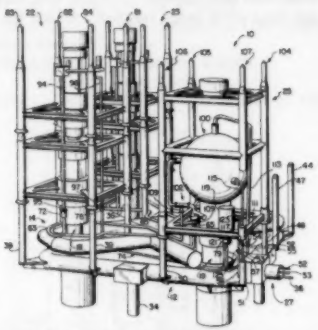
(c) then contacting said recovered solvent extractable material with a normally-liquid solvent at subcritical, reflux conditions of said solvent to liberate at least a a second portion of said hydrocarbon contained in said solvent extractable material.

4,438,817

SUBSEA WELL WITH RETRIEVABLE PIPING DECK

Roger L. Pokladnik, Houston, and William A. Valka, Spring, both of Tex., assignors to Armco Inc., Middletown, Ohio

Filed Sep. 29, 1982, Ser. No. 426,695
Int. Cl.³ E21B 43/01
U.S. Cl. 166—341 12 Claims



1. A subsea well, the combination comprising:

a template installed on the seabed and having a plurality of guide sleeves oriented over a plurality of wells formed in the seabed;

a plurality of wellheads, each installed in one of said guide sleeves;

a retrievable piping deck having a plurality of flow lines coupled thereto and located on the top of said template;

a plurality of Christmas trees, each installed on one of said wellheads;

means, including vertically oriented connectors, for coupling each of said Christmas trees to one of said flow lines;

a fluid manifold installed on said template;

means, including vertically oriented connectors, for coupling each of said flow lines to said manifold; and

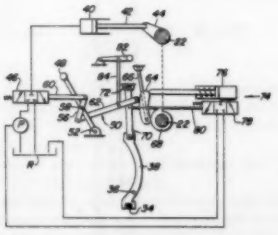
a main flow line coupled to said manifold and extending from said template to the surface of the sea.

4,438,818

DRAFT CONTROL SYSTEM FOR AGRICULTURAL TRACTOR

Richard Treichel, and Seaton Moon, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 209,239, Nov. 21, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,012
Int. Cl.³ A01B 63/112
U.S. Cl. 172—9 7 Claims



1. In a tractor having fluid-power adjusting means for effecting adjustment of an associated implement to increase or decrease draft load, a draft load control system including a source of fluid pressure, main valve means operative between the power adjusting means and the source, a mechanical spring

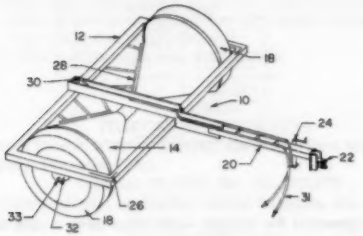
on the tractor for balancing the normal draft load of the implement, a draft responder movable on the tractor in response to changes in the spring according to changes in draft load and providing a mechanical output proportioned to draft load, a hydraulic force-amplifier on the tractor including cylinder and piston members and a second valve interposed between the cylinder member and the tractor fluid pressure source, mechanical means interposed between the draft responder and the second valve for effecting changes in position thereof in response to movement of the draft responder to cause movement of one of the force-amplifier members relative to the other, and means operative between the main valve means and the movable one of the members for operating the main valve to control the power adjusting means.

4,438,819

RICE LEVEE SHAPER AND PACKER

Lloyd E. Ryals, P.O. Box 98, Dundee, Miss. 38620

Filed May 21, 1982, Ser. No. 380,686
Int. Cl.³ A01B *29/00, 49/06*
U.S. Cl. 172—536 **2 Claims**



1. A land shaper and packer assembly for agricultural use in the construction of rice levees for shaping a ridge of loosely packed soil into a compacted ridge of uniform width and substantially flat top, having a furrow of uniform width and depth adjacent each side thereof, and with said ridge having a substantially fixed height relative to the bottoms of said furrows, said assembly comprising:

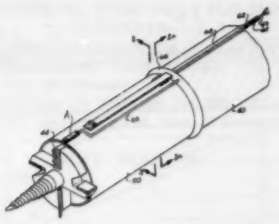
a frame including a tow bar secured thereto, an integral roller-wheel assembly rotatably secured to said frame and having an adjustable weight greater than 3,000 pounds, said roller having first and second symmetrical end parts connected by a horizontally positioned cylindrical part having a uniform fixed diameter, said first and second end parts each being identically frusto-conically shaped and having a relatively large outwardly facing end base member and an inwardly sloping surface extending from said base to one end of said cylindrical part; an axle extending through said roller and having opposite ends journaled in said frame wheel means integrally coaxially connected to each said base to rotate therewith for supporting a pneumatic tire; first and second pneumatic tires mounted on said wheel means, said tires having a diameter larger than the diameter of said bases whereby said tires maintain the roller in a position off the ground when towed along a roadway and form said furrows adjacent said ridge of soil; said tires having a diameter approximately three times greater than the diameter of said cylindrical part whereby rotation of said tires in the formation of a rice levee causes the roller to be rolled and dragged along said ridge of soil so that the soil is rolled, graded and pushed forward by said roller surfaces to completely fill in and compact all spots in said levee.

4,438,820

GRADE MONITORING AND STEERING APPARATUS

Paul N. Gibson, Rte. 1, Box 153, Saluda, S.C. 29138

Filed Nov. 16, 1981, Ser. No. 322,026
Int. Cl.³ E21B *7/04*
U.S. Cl. 175—45 **19 Claims**



1. Apparatus for monitoring the grade of pipe casing being laid in a bore underground simultaneous with said bore being cut of the type which includes a cutting head carried by a casing head attached to the front of said casing, means for steering said casing head up or down to correct the grade of the bore, and means for pushing said casing through said bore as it is formed, said apparatus comprising:

a grade sensor including a reservoir for containing a fluid medium at a predetermined level and adapted for being carried by said casing head;

a light source carried in said reservoir arranged to transmit light through said medium;

a light detector carried in said reservoir opposite said light source for detecting the intensity of said light received through said medium having an output representing said light intensity;

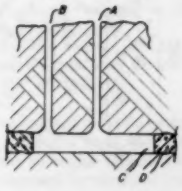
whereby changes in the intensity of light detected due to changes in the inclination of-said sensor and of said level of medium may be utilized to produce indications of deviations in grade of said casing head and said steering means may be adjusted to return said casing head to grade.

4,438,821

MINING MACHINERY

Henry Jolly, 918 Palmer Ave., Patton, Pa. 16668

Filed May 11, 1981, Ser. No. 262,751
Int. Cl.³ E21B *7/08*; E21C *41/00*
U.S. Cl. 175—74 **9 Claims**



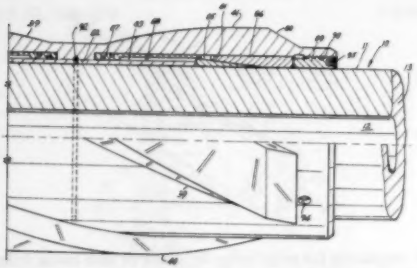
1. Mechanism for mining an underground mineral through a bore hole comprising a casing made of rotatably connected cylindrical sections having mitered ends, including means for locking each casing section with its adjoining sections, an articulated drill shaft journalled therein, and an elongated auger drill bit connected to the forward end of the articulated drill shaft, the auger drill bit being formed to cut on its face and on its circumference along its length.

4,438,822

CLAMP-ON DRILL COLLAR STABILIZERS

Larry R. Russell, 6025 Edgemoor, Suite, Houston, Tex. 77081

Filed Sep. 28, 1981, Ser. No. 306,302
Int. Cl.³ E21B 17/00
U.S. Cl. 175—325 12 Claims



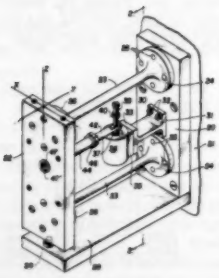
1. Stabilizer apparatus adapted for releasable connection around a drill collar, to centralize and guide the drill collar in a well, comprising tubular sleeve means having passage means therethrough end to end, a drill collar received through said passage means, connection means having movable clamping means disposed substantially entirely within said sleeve for forming, when actuated, a releasable clamped engagement between said sleeve and said drill collar, actuating means for forceably driving said clamping means in one direction to form said clamped engagement and including means for forceably driving said clamping means in the opposite direction to positively release said clamped engagement.

4,438,823

LOAD CELL

Bernard H. Hussels, South Burlington, and Charles T. Goetz, Shelburne, both of Vt., assignors to DBI Industries, Inc., South Burlington, Vt.

Filed Aug. 9, 1982, Ser. No. 406,708
Int. Cl.³ G01G 3/00, 21/23
U.S. Cl. 177—210 EM 14 Claims



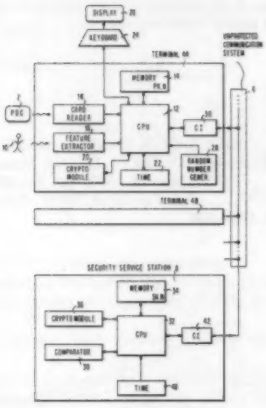
1. A load cell comprising a stationary support member, a movable load bearing member spaced from the stationary support member, a pair of circular cross section cantilever spring arms secured to the stationary support member and projecting therefrom in spaced parallel relationship in a common vertical plane and connected with and carrying said load bearing member, and a movement sensing and measuring means for the load cell including an element connected with the movable load bearing member.

4,438,824

APPARATUS AND METHOD FOR CRYPTOGRAPHIC IDENTITY VERIFICATION

Christian Mueller-Schloer, Voorhees, N.J., assignor to Siemens Corporation, Iselin, N.J.

Filed Apr. 22, 1981, Ser. No. 256,523
Int. Cl.³ H04L 9/00
U.S. Cl. 178—22.08 8 Claims



1. An apparatus for identity verification using a data card with protection against misuse of said card by unauthorized users, comprising in combination:

(a) a terminal containing

(a1) a first central processing unit having a first memory for storage of a program, of a public network key, and of variables;

(a2) a card reader for reading data from said personal data card and for introducing said data into said first memory, said data including sensitive data;

(a3) input means for introducing personal identification information into said first memory;

(a4) a first crypto module connected to said first centeral processing unit, said first module being adapted to encrypt and decrypt data received from said first memory under the control of said first central processing unit;

(b) a security service station containing

(b1) a second central processing unit having a second memory for storage of a program, of a secret network key, and of variables;

(b2) a second crypto module connected to said second central processing unit, said second crypto module being adapted to encrypt and decrypt data received from said second memory under the control of said second central processing unit;

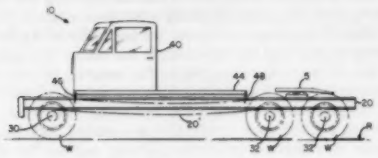
(b3) a comparator connected to said second central processing unit for comparing transmitted personal identification information with transmitted reference personal identification information, and

(c) a communication system connecting said terminal to said security service station, said communication system transmitting digital data from said terminal to said security service station, and vice versa, including said personal identification information and said reference personal identification information.

4,438,825
CAB PITCH RESTRAINT

Donald L. Stephens, King County, Wash., assignor to PACCAR Inc., Bellevue, Wash.

Filed Jul. 6, 1982, Ser. No. 395,613
Int. Cl.³ B62D 33/06
U.S. Cl. 180—89.12 6 Claims

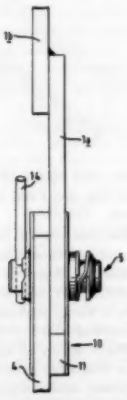


1. A vehicle which comprises:
a vehicle frame including left and right frame rails which undergo vertical deflection when under load;
a front axle attached to the vehicle frame near the front of the vehicle frame, the front axle including a plurality of front wheels mounted thereon;
a rear axle attached to the vehicle frame near the rear of the vehicle frame, the rear axle including a plurality of rear wheels mounted thereon;
a pair of cab rails coupled to the frame rails at two longitudinally spaced points of substantially equal vertical deflection along the frame rails; and
a vehicle cab mounted on the cab rails.

4,438,826
TILT CAB SUPPORT STAY

Ronald Bewers, Maldon, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 15, 1981, Ser. No. 283,578
Claims priority, application United Kingdom, Jul. 30, 1980, 8024966
Int. Cl.³ B62D 23/00
U.S. Cl. 180—89.14 6 Claims

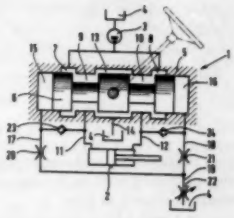


1. A tilt cab vehicle having a cab pivotally connected to a frame of the vehicle so that the cab can be pivoted and thus raised from a lowered position which it occupies when the vehicle is to be driven and having a stay comprising a pair of arms pivotally connected to each other and to the cab and frame of the vehicle, the stay being provided for supporting the cab selectively in each of a first raised position in which the cab has been pivoted through a first angle from its lowered position, and a second raised position in which the cab has been pivoted through a second and larger angle from its lowered position and in which, when the cab is in its first raised position and the vehicle stands on a horizontal surface, the arms of the stay supporting the cab directly compressively engage each other at their adjacent ends due to the force of gravity acting on the cab.

4,438,827
SERVO STEERING, ESPECIALLY FOR MOTOR VEHICLES

Armin Lang, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed May 25, 1982, Ser. No. 381,709
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122370
Int. Cl.³ B62D 5/08
U.S. Cl. 180—143 8 Claims



1. In a servo power steering system for motor vehicles, including a servo motor having opposed operating chambers, a servo pump, a reservoir, a control valve through which fluid is conducted between the pump, the servo motor and the reservoir, and a control mechanism having a restricted cross-sectional flow area that is adjustable as a function of vehicle speed, said control valve having at least one movable valve piston and at least one pair of reaction chambers, the improvement comprising means mounting the valve piston (6, 26, 27) for movement in opposite steering directions, fixed flow restricting means (20, 21) for conducting fluid under pressure from the pump in series through the reaction chambers (15, 16, 32, 33, 34, 35) and the control mechanism (22) to the reservoir (4), and one-way valve means (23, 24, 38, 39) operatively mounted between the pair of reaction chambers (15, 16, 32, 34) and the servo motor (2) for unidirectionally conducting the fluid under pressure between said one pair of reaction chambers and the operating chambers of the servo motor corresponding thereto.

4,438,828
AIR CLEANER DEVICE IN MOTORCYCLES

Mitsuo Nakagawa, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

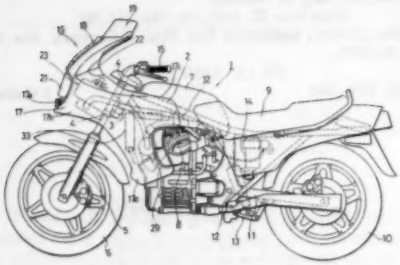
Filed May 18, 1982, Ser. No. 379,326
Claims priority, application Japan, May 18, 1981, 56-74634
Int. Cl.³ B01D 50/00
U.S. Cl. 180—219 2 Claims

1. An air cleaner device in a motorcycle, wherein said motorcycle includes a body frame; a front fork pivotably connected to said body frame; an engine mounted on said body frame; at least one meter disposed forwardly of a top portion of said front fork; and a fairing mounted on said body frame and substantially covering the front of said body frame, said front fork and said meter; wherein said fairing includes a front wall supporting a headlight mounted thereon, right and left side walls extending substantially rearwardly from right and left sides, respectively, of said front wall and a bottom wall disposed adjacent the lower side of said front wall; and wherein said air cleaner device comprises:
a casing including a transverse portion extending in a trans-

verse direction of said body frame and a longitudinal portion extending from one end of said transverse portion in a longitudinal direction of said body frame;

said transverse portion of said casing being disposed rearwardly of said headlight, forwardly of said front fork, between said right and left side walls of said fairing, substantially below said meter and above said bottom wall of said fairing;

said longitudinal portion of said casing being disposed between one of said right and left side walls of said fairing and said front fork;



said transverse portion and said longitudinal portion of said casing being connected with each other such that said casing is substantially L-shaped in plan;

said casing having a wall which defines substantially a rear part of said transverse portion and a side part of said longitudinal portion facing said front fork;

said wall of said casing being curved substantially concentrically with the pivoting locus of said front fork;

a filter element disposed within said casing; and

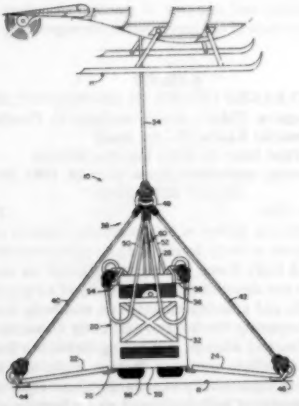
a connecting pipe connected at one end thereof to said casing and at the other end thereof to said engine so as to conduct air from said casing to said engine.

4,438,829

EMERGENCY RESCUE BOX

Donald I. Waters, 3907 Forrest Park Ave., Baltimore, Md. 21207

Filed Oct. 1, 1981, Ser. No. 307,364
Int. Cl.³ A62B 1/02
U.S. Cl. 182—150 **1 Claim**



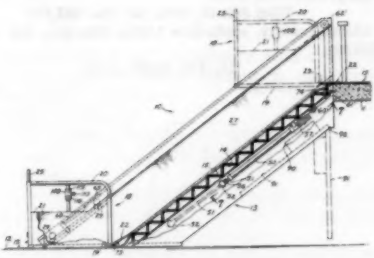
1. A system for rescuing people from a burning high-rise building having flat roofs and sides with openings for windows and the like, comprising: a rescue box of rectangular shape and with top, bottom, sides and ends, means for lifting the rescue box by a helicopter, first and second doors forming respective opposed upright sides of the rescue box, means hinging a lower edge of each of saids first and second doors to the rescue box permitting said first and second doors to swing outward and downward from the position in which they form said upright sides, means for securing said upright sides, forming said upright sides when the rescue box is lifted comprising the means for lifting including a line attaching to an upper edge portion of each of said first and second doors, the means for lifting further including at least one line attaching to the rescue box adjacent each end of the rescue box, means for securing all said lines together at a central location over said rescue box, all said lines being proportioned in length for becoming taut when said rescue box is lifted; each of said first and second doors having a smaller door therein, means for opening said smaller doors inwardly into the rescue box, said means for opening said smaller doors inwardly including hinge means, attaching to a lower portion of a respective one of said first and second doors, means for aerodynamically stabilizing the rescue box comprising a fixed tail fin extending from one of said ends thereof, and means for cushioning said rescue box when set down after lifting.

4,438,830

STAIRWAY WITH FAIL SAFE POWER LIFT FOR LADING, THE INFIRM, WHEELCHAIR PATIENTS, AND THE LIKE

Raymond W. Born, 4211 First St., Space 121, Santa Ana, Calif. 92703

Continuation-in-part of Ser. No. 51,801, Jun. 25, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,424
Int. Cl.³ B66B 9/06
U.S. Cl. 187—12 **34 Claims**



1. Combined stairway and power lift apparatus comprising:

a main frame supporting and fixed to stairs extending from end-to-end thereof;

load supporting platform means having means movably supporting the same on said main frame and including pressurized hydraulic fluid power means mounted on and along the underside of said main frame operable to propel said platform means along said stairs between the upper and lower levels served thereby and generally even with said upper and lower levels of said stairs, said platform means including a first edge relatively close to the tread edges of said stairway and a second edge remote therefrom, means supporting upright gate means on said platform means for swinging movement of said gate means between a closed position generally along said second edge and an open position leaving said second edge unobstructed and designed and constructed to prevent people from walking across said second edge of said platform when said gate means is closed; and

said power means including means for automatically and smoothly accelerating said platform means while departing from said upper and lower levels of said stairs by gradually varying the flow of pressurized fluid to and

from said hydraulic power means between no flow and full flow.

4,438,831

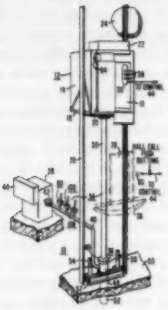
ELEVATOR SYSTEM

James E. Rohanna, Gettysburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 7, 1980, Ser. No. 110,280

Int. Cl.³ B66B *1/00*

U.S. Cl. 187—30 **4 Claims**



1. An elevator system, comprising:

a structure having floors and a hoistway,

an elevator car in the hoistway of said structure for serving the floors therein,

said elevator car having a passenger compartment for accommodating a load,

motive means for said elevator car including a hydraulic system which includes fluid means under pressure, with the pressure of said fluid means being responsive to the weight of said elevator car and the load in its passenger compartment when the elevator car is stationary,

load monitoring means responsive to the pressure of the fluid means in said hydraulic system when the elevator car is stationary, with said load monitoring means providing a predetermined signal when the magnitude of the pressure in the hydraulic system indicates the load in the passenger compartment exceeds a predetermined magnitude,

a door on said elevator car operable between open and closed positions,

and means responsive to the position of said door for inhibiting the load monitoring means from providing the predetermined signal unless the door is in the open position.

4,438,832

SLIDE PIN DEVICE IN A FLOATING CALIPER TYPE DISC BRAKE

Yoshihisa Nomura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 147,940, May 8, 1980, abandoned. This application Jun. 2, 1982, Ser. No. 384,344

Claims priority, application Japan, Jun. 9, 1979, 54-72857

Int. Cl.³ F16D *65/00*

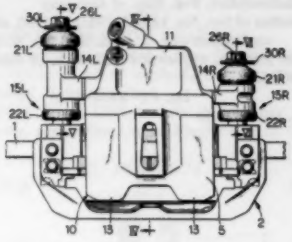
U.S. Cl. 188—73.45 **6 Claims**

1. A slide pin device for guiding a caliper assembly which functions to urge a pair of braking pad assemblies, disposed on either side of a disc rotor, onto said disc rotor, in a movement thereof parallel to the axis of said disc rotor, said slide pin device comprising:

a substantially cylindrical sleeve for guiding said caliper assembly along its external surface;

a bolt extending through said sleeve and threaded into a stationary torque receiving member at one end thereof for securing said sleeve to said torque receiving member; and

a generally planar member separate from said sleeve and having in the center thereof a bolt hole extending therethrough, said planar member being interposed between one end of said sleeve and the head of said bolt for preventing rotation of said sleeve about axis of said bolt upon rotation thereof, said planar member having means engageable with a tool for manually holding said planar member against rotation upon rotation of said bolt.



4,438,833

PISTON FOR A PNEUMATIC, HYDRAULIC, OR HYDROPNEUMATIC INSTALLATION

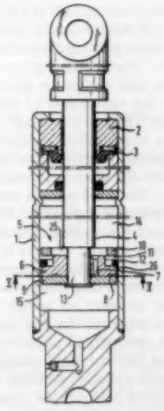
Willi Schäfer, Koblenz, Fed. Rep. of Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Sep. 28, 1981, Ser. No. 306,383

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039801

Int. Cl.³ F16F *9/19*

U.S. Cl. 188—320 **7 Claims**



1. In a piston adapted to be used in a pneumatic, hydraulic or hydropneumatic installation of the type including a cylinder filled with gas and/or liquid, comprising a piston slidably housed within said cylinder and separating the cylinder cavity into two working chambers, a piston rod connected to said piston and extending through guiding and sealing means provided at one end of said cylinder, and damping means in said piston comprising a constantly open throttled passage between said working chambers, the improvement wherein said constantly open throttled passage includes at least one spirally-shaped throttled channel, which extends in a plane perpendicular to the piston axis over an angle of more than 360°, and which is provided in one front face of the piston body and covered by one of a piston plate and a piston disc.

4,438,834
HYDRO-PNEUMATIC DAMPING UNIT

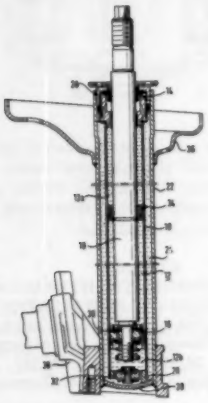
Günther Handke, Euerbach, and Johachim Kopic, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 145,837, May 1, 1980, abandoned. This application Jun. 2, 1982, Ser. No. 384,384

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922437

Int. Cl.[3] **F16F** *9/36*

U.S. Cl. 188—322.16 **33 Claims**



1. In a hydro-pneumatic damping unit which includes an elongated cylinder member forming a central cavity between first and second ends of said cylinder member, a piston rod guiding and sealing unit including a guiding member arranged at the first end of said cylinder member, said guiding and sealing unit having a guiding bore coaxially aligned with said cylinder member, an elongated piston rod extending through the central cavity and within the guiding bore of said guiding and sealing unit for movement in the axial direction of said cylinder member, a piston unit fixed to said piston rod within said central cvity to divide the central cavity into a first cylinder chamber adjacent the first end of said cylinder member and a second cylinder chamber adjacent the second end of said cylinder member, first fluid passage means associated with said piston unit for providing throttled fluid communication between the first and the second cylinder chambers when said piston rod is axially moved relative to said cylinder member, the first and the second cylinder chambers containing a body of liquid, a cylindrical container coaxially surrounding said cylinder member to form an annular cavity, said container having a first end adjacent the first end of said cylinder member and a closed, second end adjacent the second end of said cylinder member, second fluid passage means adjacent the second end of said cylinder member for providing throttled fluid communication between the annular cavity and the second cylinder chamber when said piston rod is axially moved relative to said cylinder member, the annular cavity being partly filled with a liquid and partly filled with a gas, at least a part of said guiding member being housed inside an axial section of said cylindrical container adjacent the first end of said cylindrical container, and annular cavity bridging means adjacent the first end of said container for closing the annular cavity in the axial direction of said container and for radially centering said guiding member relative to said container, the improvement comprising,

at least the part of said guiding member housed inside said axial section of said cylindrical container has an outer diameter smaller than the inner diameter of said axial section of said container; said guiding member forming a contact surface which is directed substantially in the axial direction of said cylindrical container; and said bridging means includes a first annular supporting member axially fixed with respect to said guiding member and having a sealing face directed toward the second end of said cylinder member, a second annular supporting member axially fixed with respect to said guiding member and having a sealing face directed opposite from the second end of said cylinder member, and an annular cavity sealing member which is fitted between the outer circumferential surface of said guiding member and the inner circumferential surface of said container in the radial direction of said container and between the sealing faces of said first and second annular supporting members in the axial direction of said container, at least one of said first and said second annular supporting members comprising sheet material which forms a substantially radially projecting first flange for engaging said substantially axially directed contact surface of said guiding member, a substantially radially projecting second flange for supporting said annular sealing member, and an intermediate section extending generally in the axial direction of said cylinder member for connecting said first flange and said second flange to one another, the radial thickness of said intermediate section being smaller than one-half the difference between said outer diameter of said part of said guiding member housed inside said axial section of said cylindrical container and said inner diameter of said axial section of said container, and said second flange extending radially between said part of said guiding member and said axial section of said container.

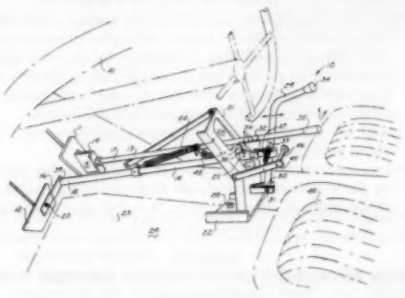
4,438,835
HAND OPERATED CONTROLS FOR MOTOR VEHICLE

William Dowden, deceased, late of Los Angeles, and by Naomi Muckelroy, executrix, 324 E. 81st St., Los Angeles, Calif. 90003

Filed Jun. 8, 1981, Ser. No. 271,804

Int. Cl.[3] **B60K** *41/20*; **G05G** *9/08*

U.S. Cl. 192—3 M **4 Claims**



1. In a motor vehicle having a conventional automatic gear transmission, a brake pedal, and a fuel flow control foot pedal disposed in a driver compartment, the hand operated vehicle controls comprising:

a first push-pull control rod disposed and separately clamped to a fuel flow control foot pedal at a first control rod first terminus,

a clamp rotatably secured to said first control rod first terminus and to said fuel flow foot pedal,

a second push-pull control rod disposed and separately clamped to a brake pedal at a second control rod first terminus,

a second clamp rotatably secured to said second control rod first terminus and to said brake pedal,

a bearing plate extending upright from the floor of said driver compartment and adaptively angularly positioned and secured at a base plate to said floor,

two guiding and sliding apertures disposed in said upright bearing plate, each one of said apertures holding and guiding a separate said first and second push-pull control rod slidable in said apertures,

a brake first lever pivotally secured at a first brake lever terminus to said bearing plate and pivotally secured at a mid-lever location to said second push-pull rod second terminus, the second terminus of said lever formed into a manual hand handle,

multiple spaced rod position notches on said first push-pull control rod disposed normal to the rod length on the rod underside adjacent to the driver compartment floor,

a lock slot stop disposed in said sliding aperture of said bearing plate, engagable with one of said multiple position notches of said first push-pull control rod,

a brake second lever pivotally secured at a first lever terminus to said bearing plate and having a second lever terminus handle curved to rotate forward and upwardly, lift said first push-pull control rod from said lock slot stop, when said brake first lever is cooperatively moved forward, and

at least two spring means, each anchored at a first spring means terminus of each means to said bearing plate and at a second terminus of each spring means anchored to said first push-pull rod and said second push-pull rod, providing tension means retracting said first and second push-pull rods to a non-operative position.

4,438,836

FREEWHEEL HUB ASSEMBLY

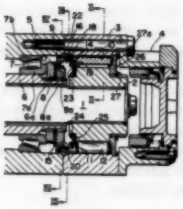
Tooru Kagata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 22, 1981, Ser. No. 256,575

Claims priority, application Japan, Apr. 24, 1980, 55-56625; Apr. 25, 1980, 55-54241

Int. Cl.³ F16D *41/07, 41/08*

U.S. Cl. 192—36 **7 Claims**



1. A freewheel hub assembly comprising a wheel hub rotatably supported by bearing means on non-rotatable support means, retaining means mounted on said non-rotatable support means, non-rotatable surface means non-rotatably mounted on the radial periphery of said retaining means, freewheel means connecting said wheel hub with rotatable axle means for transmitting rotating torque from said axle means to said wheel hub but leaving the wheel hub freely rotatable when the axle means is not rotating, said freewheel means including inner disc means adapted to be connected with said axle means to rotate therewith, said inner disc means having a profiled outer periphery, outer housing means rotatable with said wheel hub and having a circular inner periphery opposed to said profiled outer periphery of the inner disc means, roller cage means disposed between the outer periphery of the inner disc means and the inner periphery of the outer housing means, a plurality of rollers carried by said roller cage means, retarder means carried by said cage means and having friction surface means adapted to be brought into friction engagement with said non-rotatable surface means, said retarder means being carried at one axial end of said cage means for axial movement through an engagement between at least one cut-out formed in said axial end of the cage means and at least one projection formed in said retarder means and complementary to said cut-out in the cage means.

4,438,837

CONVEYOR DRIVE GEAR BOX

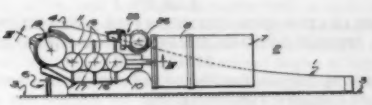
Brian R. Stoppani, Doncaster; Nigel J. Box, Skellow, and David D. Phillips, Worksop, all of England, assignors to Mining Supplies Limited, Balby, England

Filed May 7, 1980, Ser. No. 148,164

Claims priority, application United Kingdom, May 10, 1979, 7916281

Int. Cl.³ B65G *19/18*

U.S. Cl. 198—735 **5 Claims**



1. A conveyor drive gear box, comprising:

(a) a gear box casing, said gear box casing extending in a longitudinal direction in generally symmetrical relationship to a predetermined plane and having an offset nose above or below the predetermined plane projecting from a terminal end thereof;

(b) an output shaft located in said casing nose;

and

(c) a gear train located within said casing for transmitting power to said output shaft, said gear train including a plurality of shafts with gear wheels mounted thereon, each of the shafts in said casing being rotatable about substantially parallel axes with all of the shafts in the gear train being located within the predetermined plane offset from the axis of the output shaft whereby the output shaft is located above or below said predetermined plane.

4,438,838

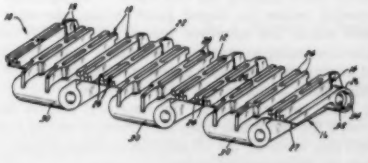
CONVEYOR CHAIN FOR USE WITH FINGERED TRANSFER PLATE

Wasyly G. Hodlewsky, Greendale, and Roger H. Schroeder, Hartland, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed May 1, 1981, Ser. No. 259,616

Int. Cl.³ B65G *17/08*

U.S. Cl. 198—853 **7 Claims**



1. A chain link comprising:

a base portion, including at least two first hollow barrels, said first barrels being axially aligned and having a space between them, and at least one second hollow barrel, the axis of said second barrel being radially spaced from and parallel to the axis of said first barrels, such that said second barrel is positioned opposite the space between said first barrels; and

a raised portion integral with and supported by said base portion, said raised portion comprising:

a plurality of coplanar fork-shaped members, each of said fork-shaped members comprising two prongs and a stem, wherein the prongs of each fork-shaped member are paral-

lel to each other and perpendicular to the axes of said barrels, said prongs substantially spanning the distance between said first and second barrels, and the width of said stem is less than the distance between said prongs, said stem being located over one of said barrels, and said fork-shaped members being arranged in a regularly-spaced row such that the fingers of a fingered transfer plate may be received between said fork-shaped members, wherein the upper surface of said stems is curved so as to prevent kick-up, and

wherein each of said fork-shaped members further comprises a cross-member extending between and attached to both of the prongs approximately at their midpoints.

4,438,839

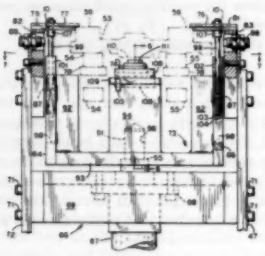
APPARATUS AND METHODS FOR ASSEMBLING END SHIELD ASSEMBLIES FOR DYNAMOELECTRIC MACHINES

James M. Tomson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 128,085, Mar. 7, 1980, Pat. No. 4,348,791. This application Jul. 16, 1982, Ser. No. 399,087

Int. Cl.³ B65G *47/00*

U.S. Cl. 198—345 **5 Claims**



3. A method of lifting the end frame of a dynamoelectric machine from a conveyor at a work station; wherein the end frame includes a centrally disposed bearing supporting portion and laterally extending portions, at least some of which are susceptible of being supported on conveyor means; the method comprising: moving an end frame on the conveyor means into proximity with a lift mechanism and guiding the end frame in the vicinity of the lift mechanism with guide means; engaging the end frame in the vicinity of the bearing supporting portion thereof while holding the end frame in engagement with the conveyor means by biased guide means; elevating the end frame above the conveyor means with the lift mechanism while continuing to engage the end frame with the guide means and biasing the end frame against the lift mechanism with the guide means; performing a work operation on the end frame at the work station between the time that the lift mechanism elevates the end frame from the conveyor means and a subsequent time at which the lift mechanism has redeposited the end frame on the conveyor means.

4,438,840

APPARATUS FOR SELECTING CLOSURES

Franciscus A. Damen, Langeweg, Netherlands, assignor to Flessluittechniek B. V. Handelend Onder De Naam Calumatic, Dongen, Netherlands

Filed Feb. 19, 1982, Ser. No. 350,200

Claims priority, application Netherlands, Feb. 27, 1981, 8100966

Int. Cl.³ B65G *47/24*

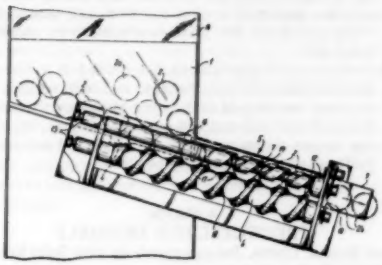
U.S. Cl. 198—398 **1 Claim**

1. The apparatus for selecting closures out of a supply of closures in which they are present in one plane with the back to one or the other side, which closures have a cylindrical raised edge comprising:

a hopper that in cross section is rectangular and is provided with side walls that are mutually spaced in such a manner that the closures fit therebetween, said hopper also having side edges and a lower wall, which lower wall slopes and is provided with an opening,

a first worm disposed below said opening and extending parallel to the lower wall of said hopper and having a profile with a curvature in which the raised edges of the closure fit, and a side wall of the hopper adjoining the opening of the lower wall having an opening,

a cylindrical shaft extending into said side wall opening and having an outer face tangential to the plane of this side wall, and extending parallel to said first worm and driven



by said first worm synchronously, which shaft extends with said first worm until outside the side wall of the hopper,

a second worm merging with said shaft and having the same pitch and with a width of thread that is substantially smaller than the inner diameter of the raised edge of the closures, the back of said second worm being opposite to the cavity of the profile of the first worm,

the first worm and the shaft are driven in the same rotational direction in such a manner that the first worm downwardly discharges the closures that are not correctly oriented and that do not find support on the second worm, the closures being discharged between the first and second worms, and whereby the correctly oriented closures are longitudinally advanced by said first worm and second worm to a use position.

4,438,841

OBSTRUCTION CLEARING APPARATUS FOR MINING CONVEYORS

Gregory Johnson, P.O. Box 166, Virgie, Ky. 41572

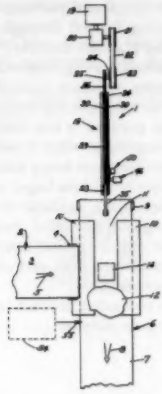
Filed Jul. 6, 1981, Ser. No. 280,268

Int. Cl.³ B65G *43/00*

U.S. Cl. 198—524 **24 Claims**

1. A conveyor system comprising a receiving conveyor, feed means positioned above said conveyor for feeding material onto said conveyor, means for restricting the fed material to

the central portion of said conveyor, sensing means to sense a build up of material cause by an obstruction on said restriction



means, and means responsive to said sensing means for removing the obstruction from said restriction means.

4,438,842

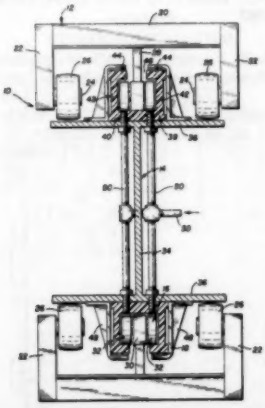
SLIDE CONVEYOR WITH SIDE STABILIZERS

Robert L. Alldredge, 130 Pearl St., Apt. 1108, Denver, Colo. 80203, and Robert J. Deltour, 16227 E. Arkansas Dr., Aurora, Colo. 80012

Continuation of Ser. No. 74,345, Sep. 11, 1979, abandoned. This application Jul. 26, 1982, Ser. No. 401,916

Int. Cl.³ B65G *15/60*

U.S. Cl. 198—838 12 Claims



1. An improved conveyor of the type having a convoluted longitudinally extending belt adapted to follow a laterally and vertically curved path and a conveyor chain capable of both lateral and vertical bending with the path of the belt, wherein the improvement comprises:

(a) a longitudinally extending conveyor track assembly carrying a longitudinally oriented chain slide surface defining substantially the full length of the operational conveyor path and having a bottom and opposite side walls thereon, and carrying on each lateral side of the slide surface a stabilizer operating surface;

(b) a belt carriage connected to the conveyor belt and extending transversely thereto, having a central connecting means for joining the carriage to a single conveyor chain substantially at the transverse center of the belt and having a pair of laterally speced stabilizer means flanking said central connecting means and overlying the stabilizer operating surfaces when the chain overlies said slide surface bottom wall, the stabilizer means being oriented with respect to the central connecting means and chain such that at substantially any point along the length of the chain slide surface when the carriage is laterally evenly weighted the chain is in force bearing contact with said slide surface and the stabilizer means are without force bearing contact with said stabilizer operating surfaces; and

(c) wherein the chain is of the type formed from pin links and intermediate block links, the central connecting means being joined only to the block links, the block links being of the type having a transverse hole at each end thereof for receiving the pin of a pin link and the hole being sufficiently larger in diameter than the pin that the block link is capable of a predetermined degree of lateral tilting before the block link applies twisting torque to the pin, and wherein the stabilizer means are oriented with respect to the central connecting means such that a stabilizer means will contact an operating surface in force bearing relationship when the carriage is laterally unevenly wieghted prior to the time that a block link applies substantial twisting torque to a pin.

4,438,843

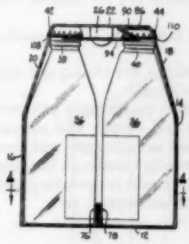
WRAP-AROUND STYLE BEVERAGE BOTTLE CARRIER WITH FULLY INTEGRATED PRODUCT SEPARATION MEANS

Earl J. Graser, Monroe, La., assignor to Manville Service Corp., Denver, Colo.

Filed Feb. 18, 1982, Ser. No. 349,893

Int. Cl.³ B65D *75/00*

U.S. Cl. 206—148 4 Claims



1. A wrap-around bottle carrier for a plurality of bottles, comprising:

(a) a bottom panel;

(b) a pair of vertical first side panels hingedly attached to the bottom panel;

(c) a pair of sloped second side panels hingedly attached to the first side panels, each sloped second side panel having formed thereon a plurality of openings along the upper edge thereof for receiving a protruding portion of the caps of the bottles to be retained in the carrier;

(d) an outer top panel hingedly attached to one of the second side panels and having a handle means;

(e) a partial inner top panel hingedly attached to the other of the second side panels and fixedly attached to a portion of the underside of the outer top panel;

(f) an upper product separation means hingedly attached to the partial inner top panel, the upper product separation means comprising first and second separator panels hingedly attached to each other along a fold line, the first separator panel extending downwardly from and beneath the inner top panel and the second separator panel extending parallel to and spaced below the outer and inner top

panels, a series of generally oval shaped openings aligned with the fold line and located partially on the first separator panel and partially on the second separator panel, and a series of generally semi-circular cutouts along a free edge of the second separator panel, for positioning between the caps and the necks of the bottles to be contained in the carrier to separate the bottles both longitudinally and transversely in the carrier; and

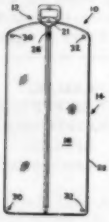
(g) a lower product separation means comprising a plurality of tabs hingedly attached to the bottom panel and designed to be positioned vertically between the bottles to be contained in the carrier in order to provide both longitudinal and transverse bottle separation in the carrier.

4,438,844

TRAVELING GARMENT BAG

Jacob Kesselman, 53B Troy Dr., Springfield, N.J. 07081, and Howard Kesselman, 628 S. Highland, Merian Station, Pa. 19066

Filed Aug. 11, 1982, Ser. No. 407,087
Int. Cl.³ A45C *3/00, 13/26*
U.S. Cl. 206—287.1 **11 Claims**



1. A novel garment bag for hanging items therein, comprising:

a storage area formed by a front panel, a back panel and a side gusset;

a means for opening and closing said storage area positioned on said front panel;

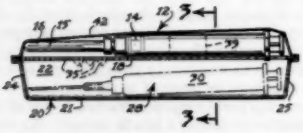
a handle assembly positionable at a terminus of said means for opening and closing said storage area on said side gusset of said storage area, said handle assembly comprised of a handle member, a hanging member, a closure member and a means for attaching said handle assembly to said gusset of said storage area.

4,438,845

CONTROL PACKAGE FOR ELONGATED ARTICLE

Charles M. Mochow, Rte. #1, Iron Hill, Burns, Tenn. 37209

Filed Jul. 18, 1983, Ser. No. 514,553
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—366 **9 Claims**



1. A package for an elongated product having a predetermined length and transverse dimension, comprising:

(a) an elongated container having closed side and bottom walls and an upper portion, defining a discard chamber having a length, width and depth greater than the corresponding dimensions of a discarded elongated product received within said discard chamber,

(b) an elongated platform member covering the upper portion of said discard chamber, said platform member being of a sufficient length and width for receiving an elongated product on top of said platform member and above said discard chamber, in a packaged position,

(c) an elongated opening formed through, and extending longitudinally of, said platform member,

(d) said elongated opening having opposed edge portions defining elastic closure members normally occupying a closed position in which the spacing between at least some of the opposed edge portions is less than the transverse dimension of the elongated product in said package position, and said closure members being adapted to support said elongated product in said packaged position,

(e) said closure members being yieldable to the downward pressure of an elongated discarded product having a length less than the length of said opening when said product is forced downward from said platform member into said discard chamber, and

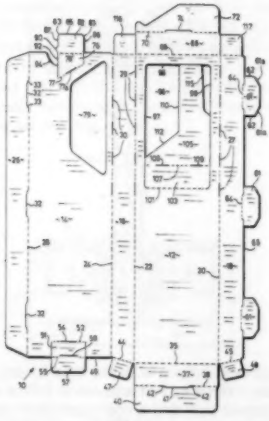
(f) means retaining an elongated product in said packaged position on said platform member.

4,438,846

CASSETTE BOX CONSTRUCTION

Andreas S. Stylianou, 5595 Finch East, Scarborough Ontario, Canada M1B 2T9

Filed Aug. 9, 1982, Ser. No. 406,364
Int. Cl.³ B65D *5/50, 25/10, 25/54, 55/02*
U.S. Cl. 206—387 **11 Claims**

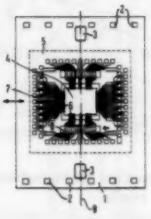


1. In a box construction which includes an entry tab adapted to enter a slot, the entry tab having side edges and a leading edge, the improvement which comprises, on one side edge of the entry tab, a protrusion which merges smoothly with said one side edge in both directions, said protrusion being of a size such as to make the width of the entry tab at the region of the protrusion greater than the width of the slot, thereby to require a distorting force to insert the entry tab into the slot, whereby removal of the entry tab from the slot is discouraged.

4,438,847
FILM CARRIER FOR AN ELECTRICAL CONDUCTIVE PATTERN

Otmar Fritz, Neukeferloh, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 2, 1983, Ser. No. 471,311
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207450
Int. Cl.³ B65D *85/30, 73/02;* H05K *5/00*
U.S. Cl. 206—330 8 Claims

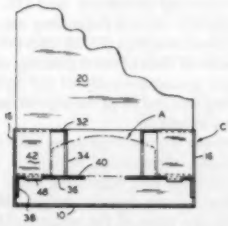


1. A carrier film for use in the manufacture of electronic micro-packs having contact arrays comprising a film having marginal edge perforations along each edge longitudinal side thereof, the marginal perforations being substantially of the dimension and spacing of transport perforations for narrow gauge film, at least two adjustment openings through the carrier film, the adjustment openings being positioned on opposite sides of the film normal to the transport direction of the film, the adjustment openings being positioned and dimensioned substantially according to position and size standards for cinema film transport perforations, at least one pair of said adjustment openings being provided for each contact array area of the carrier film.

4,438,848
CUSHIONING CARTON

James Montealegre, St. Paul, and James L. Rader, Burnsville, both of Minn., assignors to Container Corporation of America, Chicago, Ill.

Filed Aug. 20, 1982, Ser. No. 410,042
Int. Cl.³ B65D *81/02, 85/30*
U.S. Cl. 206—588 5 Claims



1. A carton, formed of a unitary blank of foldable paperboard, for holding and cushioning a packaged article, comprising:

(a) a bottom wall panel having pairs of opposed front and rear side wall panels and end wall panels foldably joined to side and end edges thereof and to each other and upstanding therefrom to form a box-like structure;

(b) a cover for said structure which includes a top wall panel;

(c) an integral, internal support structure for holding a fragile article in a predetermined position spaced from said front and rear side, end, bottom, and top wall panels; and

(d) said support structure comprising a pair of cooperating opposed tubular members spaced from each other at opposite ends of said carton and each including:

(i) an upper panel foldably joined at its outer edge to an upper edge of a related end wall panel and extending inwardly therefrom;

(ii) an inner side panel foldably joined at its upper edge to an inner edge of said upper panel and extending downwardly therefrom;

(iii) a lower panel foldably joined at its inner edge to a lower edge of said inner side panel and extending outwardly therefrom toward said related end wall panel in spaced relation to said bottom wall panel, said lower panel having an integral shelf panel formed by material of the related said inner side panel, said shelf panel projecting inwardly toward and adapted to cooperate with a related shelf panel of the other tubular member to support the packaged article above said bottom wall panel;

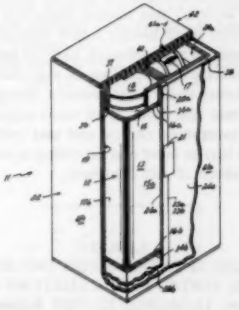
(iv) an anchor panel foldably joined to an outer edge of said lower panel and secured to an inside surface of said related end wall panel; and

(v) a vertical strut formed from material within said upper panel thereof and extending downwardly therefrom at right angles to said lower panel and engaging said lower panel.

4,438,849
PACKAGE FOR PROTECTING A GENERALLY RECTANGULAR PARALLELPIPED ARTICLE

Orison W. Stone, Middlebury, Vt., assignor to Pack Image, Inc., Middlebury, Vt.

Filed Nov. 23, 1981, Ser. No. 324,035
Int. Cl.³ B65D *81/02*
U.S. Cl. 206—592 10 Claims



1. In combination with a generally rectangular metallic container having peripheral chimes on its upper and lower surfaces, a protective package comprising

an inner liner surrounding said container and having upper and lower edge portions extending beyond the chimes at the upper and lower ends of said container;

inner flanges secured to said upper and lower edge portions and engageable with the edges of said chimes at respective ends of said container;

a separate filler member forming a generally rectangular rib disposed within each chime of said container adapted to support the end walls of said container against internal pressure and to maintain said flanges engaged with the edges of said chimes;

and a rectangular outer carton surrounding said liner and said ribs at the end of said container wherein the inner

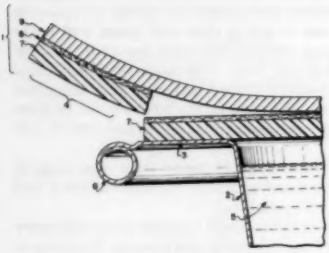
dimensions of said outer carton correspond to the exterior dimensions of said inner liner.

4,438,850

MEMBRANE CLOSURE STRUCTURE

Merle S. Kahn, Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jul. 15, 1982, Ser. No. 398,672
Int. Cl.³ B65D *43/02, 51/20*
U.S. Cl. 206—634 **10 Claims**



1. A membrane closure for a container, said membrane closure being heat sealable to said container and said membrane closure being capable of withstanding retort sterilization, said membrane closure comprising a plastics resin film layer, said plastics resin film layer providing protection and splatter resistance for contents of said container after removal of a barrier layer therefrom, an intermediate adhesive layer bonded on one side thereof to said plastics resin film layer and a barrier layer bonded on one side thereof to the other side of said adhesive layer, said plastics resin film layer having a heat seal strength to said container greater than the adhesive strength of said adhesive layer to said plastics resin film layer and said plastics resin film layer having a tear strength less than the adhesive strength of said adhesive layer to said plastics resin film layer, whereby upon peeling of said membrane closure from said container under hand pressure, failure occurs within said plastics resin film layer at an outer edge of a heat seal between said membrane closure and said container, thereby removing said barrier layer and providing a protective covering for the contents of said container.

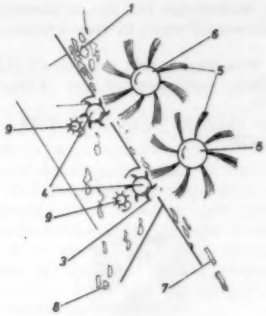
4,438,851

METHOD AND APPARATUS FOR THE SORTING OUT OF PLASTIC FOILS FROM A MIXTURE OF REFUSE

Peter Voelskow, Holzinshaus 15, 7869 Schönau/Schw., Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,538
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039547
Int. Cl.³ B07C *5/34*
U.S. Cl. 209—616 **5 Claims**

1. Method for sorting out plastic foil from a mixture of refuse which previously has been divested of at least its components of heavy materials, such as stone, glass and iron, in which the mixture of refuse is conducted past spines of a spiked roller with a direction of movement corresponding so that foil or textile wastes are seized and more rigid components, such as paper, are not seized, characterized in that the mixture of refuse is conveyed in a thin layer using moderate feeding power in opposite direction of movement past said pointed spines by means of a broom or brush so that only components with higher tensile strength remain hanging on the spines while components with lower tensile strength, such as paper, or components which are not seized, such as leather, cardboard,



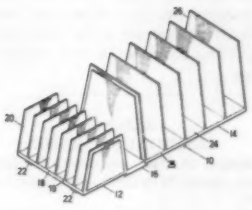
wood boards and thick-walled plastic refuse, are further conveyed by the broom or brush.

4,438,852

MODULAR DESK ORGANIZER AND ADAPTER THEREFOR

Donald L. Evans, Windsor, Wis., assignor to Don Evans, Inc., DeForest, Wis.

Filed Jun. 15, 1981, Ser. No. 273,915
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—11 **2 Claims**



1. A modular desk organizer comprising two organizing units (**12, 14, 112, 114**), each of which is one of a vertical sorting tray (**12, 14, 114**) and a horizontal sorting tray (**112**);

a downwardly extending peripheral skirt (**19, 25**) formed around the periphery of each organizing unit;

a pair of spaced, depending legs (**22, 28, 122**) provided along two opposite sides of each of the organizing units, the legs being positioned spaced inwardly of the peripheral skirt on the organizing unit and all of the legs on the organizing unit being equal in length;

an adapter (**12**) joining the two organizing units together and including a planar, rectangular, horizontal surface (**30**) extending between the two organizing units;

a pair of horizontal, planar support shelves (**32**) extending outwardly from the sides of the adapter (**12**) at a lever lower that the horizontal surface (**3**) and under the adjacent organizing units with the height of the support shelves (**32**) selected to correspond to the length of the legs on the organizing units so that the organizing units remain horizontal and rest firmly and evenly on all four of their legs (**22, 28**), each of the support shelves (**32**) having a pair of spaced apertures (**34**) formed therein to receive therethrough one pair of the legs of one of the organizing units, the apertures (**34**) being located in the support shelves so that the peripheral skirt on each of the organizing units is pressed against the horizontal surface of the

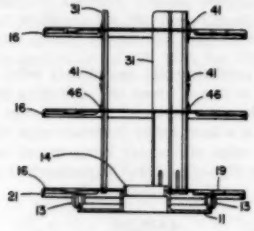
adapter and rests on top of the support shelf (32) so that the adapter is securely attached to the organizing units.

4,438,853

ROTATING STORAGE RACK FOR BABY FOOD CONTAINERS

Jody L. Numbers, Scottsdale, Ariz., assignor to Monterey Laboratories, Inc., Las Vegas, Nev.

Filed Nov. 25, 1981, Ser. No. 325,005
Int. Cl.³ A47B 73/00
U.S. Cl. 211—77 10 Claims



1. A rotating rack for supporting a plurality of containers, comprising; a base member, a plurality of shelf units, a plurality of vertical support members, means for supporting one of said shelf units on said base member in freely rotating fashion, means for securing said vertical support members to said one shelf unit for rotation in common therewith, and means for securing the remainder of said plurality of shelf units to said vertical support members in vertically spaced relationship, each of said shelf units comprising a generally disc-like panel, and a plurality of container-engaging depressions formed in said panel and spaced thereabout to engage the lower portions of said containers, said depressions being joined by a plurality of interconnecting channel depressions interposed therebetween, said means for supporting one of said shelf units on said base in freely rotating fashion including a plurality of rollers extending from said base member and adapted to impinge on the lower surface of said one shelf unit, said container-engaging depressions and said interconnecting channel depressions forming on said lower surface a continuous closed curved flat of substantially planar, ring-like configuration, said rollers engaging said closed curved flat to support said one shelf unit in freely rotating fashion.

4,438,854

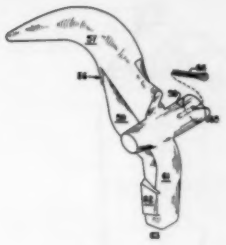
RAILWAY COUPLER

Donald L. Baughman, and William O. Elliott, both of Pittsburgh, Pa., assignors to McConway & Torley Corporation, Pittsburgh, Pa.

Filed Nov. 20, 1981, Ser. No. 323,273
Int. Cl.³ B61G 3/06
U.S. Cl. 213—127 11 Claims

1. A railway coupler knuckle thrower including a knuckle-actuating leg for engaging a thrower pad on a knuckle while pivotally supported by a coupler head, said thrower further including a lock-actuating surface to engage with a lock for pivoting said thrower, said thrower further including a downwardly-extending trunnion for pivotal support of the thrower by a thrower hole in a bottom wall of said coupler head, the improvement comprising a thrower retainer engaged with an end portion of said trunnion and arranged outside said coupler head for preventing withdrawal of the trunnion from the thrower hole.

6. In a railway coupler housing including a bottom wall section extending forwardly beyond a horn line to a downwardly-inclined back lock chamber wall of a lock chamber, said back lock chamber wall including a floor section with a thrower hole extending therethrough, said coupler housing further including a guard arm on a guard arm side and a knuckle on an oppositely spaced knuckle side, a side wall extending forwardly from the horn line at the guard-arm side, and a side wall diverging outwardly from the horn line at the knuckle side and continuing vertically from a bottom wall section at a rearwardly-spaced relation from the thrower hole along a sufficient height to permit a generally vertical dropping of a thrower within the interior of the coupler head for engaging a trunnion of the thrower in the thrower hole, the combination therewith of a thrower having an elongated trunnion for pivotal support by said thrower hole, and a thrower retainer arranged outside said lock chamber to engage with the end portion of the trunnion for preventing withdrawal of the trunnion from the thrower hole.

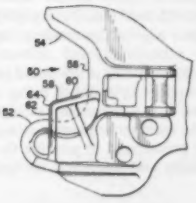


4,438,855

RAILWAY COUPLER SHELF CHAMFER

Russell G. Altherr, Munster, Ind., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Jan. 21, 1982, Ser. No. 341,307
Int. Cl.³ B61G 3/04, 7/00
U.S. Cl. 213—153 1 Claim



1. A railway car coupler comprising a head including a throat portion, a knuckle pivotally connected to the head at one side of the longitudinal vertical centerplane of the head,

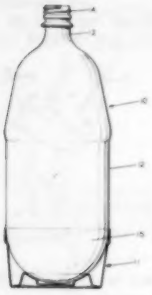
a generally planar, lower shelf extending from the head below the knuckle, said lower shelf extending from an intersection with the throat to a point substantially adjacent the pivot of the knuckle, said lower shelf having a front edge surface and a side edge surface, and a chamfer on the side edge surface and part of the front edge surface of the lower shelf, said chamfer extending downwardly and away from the guard arm side of the coupler head on the edge surface and downwardly and toward the coupler throat on the front edge surface.

4,438,856

COMBINATION BASE CUP AND BOTTLE

Long F. Chung, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 30, 1981, Ser. No. 336,000
Int. Cl.³ B65D *23/08*
U.S. Cl. 215—12 R **14 Claims**



1. A pressurized fluid package comprising:
an oriented plastic bottle having a main body that includes a generally cylindrical side wall,
a neck terminating in a neck finish on the upper end of the neck for receiving a closure, a hemispherical bottom wall in which the radius of the hemisphere forming the bottom wall is substantially equal to the radius of the main body,
a base of plastic material comprising a standing ring for engaging a support surface, said base adapted for injection molding with a reduced molding cycle time, said base being of substantially uniform wall thickness,
said standing ring being so constructed and arranged that it has a generally planar contacting surface for substantially full contact with the supporting surface for greater stability,
said base including a support ring spaced above said standing ring, the support ring being so constructed and arranged that it has substantially full contact with the bottom of the bottle,
said base having an annular supporting member extending from the inner periphery of the standing ring and inclined upwardly and inwardly to the outer periphery of the support ring, the base initially engaging a support surface along the outer edge of the standing ring, the standing ring flexing into substantially full contact with the support surface when the bottle is filled and pressurized,
said annular supporting member being so constructed and arranged that it is substantially straight in frusto-conical shape and the member remaining straight when the bottle is filled and pressurized to provide the package with improved stability and improved strength against top load stress.

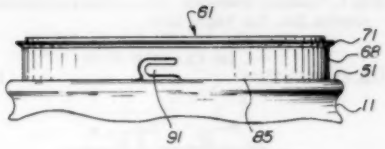
4,438,857

CAP AND NECK STRUCTURE FOR A WIDE-MOUTH JAR

Joseph J. Bullock, III, Atherton, Calif., assignor to Three Sisters Ranch Enterprises, San Carlos, Calif.

Filed Jul. 12, 1982, Ser. No. 397,550
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—256 **7 Claims**

1. A cap of the type having a central top disc, a thin-walled substantially cylindrical outer skirt of substantially uniform thickness depending from said disc, an upper internal circumferential bead on said outer skirt, a lower internal circumferential bead on said outer skirt below said upper bead, a circumferential score line in said outer skirt above said lower bead, the improvement which comprises a portion of said outer skirt below said score line being cut away to form a pull tab extending in a direction parallel to said score line, whereby upon pulling said tab circumferentially, said outer skirt severs along said score line, said lower bead being removed as said tab is pulled, said portion of said outer skirt cut away comprising a



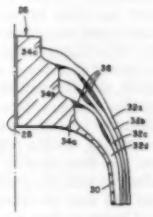
straight section parallel to and immediately below said score line, an arcuate section of about 180° extending down to the lower edge of the outer skirt, and the lower edge of said tab being cut away at a level above the lower edge of said outer skirt, the upper edge of said tab being spaced substantially below the lower edge of said skirt immediately thereabove.

4,438,858

FILAMENT WOUND VESSEL WITH IMPROVED POLAR FITTING

Richard L. Grover, Lincoln, Nebr., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 3, 1982, Ser. No. 345,327
Int. Cl.³ B65D *8/00*
U.S. Cl. 220—3 **10 Claims**



1. In a filament wound pressure vessel which has a generally spherical portion including a polar opening defined by a fitting, a composite comprising a plurality of layers of filaments forming part of the thickness of the vessel and wound about the fitting, said fitting comprising a polar boss having shoulder means defining a stepped configuration of decreasing diameters in a direction outwardly of the vessel whereby sequential layers of filaments lay against sequentially smaller diameters of said fitting, the wind angle of each layer being such as to lay adjacent to the largest unwound step diameter until the composite thickness reaches the extremity of the step where the wind angle of the wind pattern is changed such that the layers lay adjacent the next smaller unwound step diameter.

10. A method of fabricating at least a generally spherical portion of a filament wound pressure vessel wherein a plurality of layers of filaments form part of the thickness of the vessel, comprising:
providing a fitting with a polar opening and with shoulder means defining a stepped configuration of decreasing diameters in a direction outwardly of the vessel, and
winding said layers of filaments about said polar boss whereby sequenial layers of filaments lay against sequentially smaller diameters of said fitting, the wind angle of each layer being such as to lay adjacent to the largest unwound step diameter until the thickness reaches the extremity of the step, and changing the wind angle of the

wind pattern such that the layers lay adjacent the next smaller unwound step diameter.

4,438,859

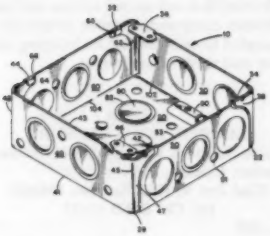
ELECTRICAL JUNCTION AND OUTLET BOX

Leszek Solek, St.-Lambert, Canada, assignor to Commander Electrical Materials, Inc., St. Jean, Canada

Continuation of Ser. No. 360,121, Mar. 19, 1982, abandoned. This application Jul. 29, 1983, Ser. No. 517,935

Int. Cl.³ H02G *3/08*

U.S. Cl. 220—3.2 **1 Claim**



1. A unitary folded metal electrical wiring box comprising:

a generally flat base portion having a polygonally shaped periphery defined by a plurality of angularly disposed straight edges;

an equal plurality of sidewall portions;

said plurality of sidewall portions comprising first and second adjacent sidewall portions, each having a first and second edge;

each of said sidewall portions disposed generally perpendicularly to said base portion and integrally joined thereto along a portion of said first edge, said first edge being a fold line coincident with a straight edge of said base portion;

said first and second sidewall portions disposed at an angle with one another to form a corner region;

said first sidewall portion providing an indented portion adjacent to said corner region, said corner region being rounded;

said indented portion being indented inwardly and extending from said first edge to said second edge of said first sidewall portion;

said second sidewall portion providing an extended portion extending from said first edge to said second edge of said second sidewall portion and being folded around the corner at said corner region to lie generally parallel to said first sidewall portion and mate with said indented portion of said first sidewall portion creating a flat surface;

said extended portion of said second sidewall portion having means engaging said first sidewall portion;

said means for engaging comprising a tab disposed on said extended portion of said second sidewall portion, said tab being folded inwardly over said second edge of said first sidewall portion gripping said first sidewall portion;

further including tab engaging means in said second edge of said first sidewall portion for receiving said tab to prevent lateral movement of said tab along said second edge;

said tab engaging means comprising a notch in said second edge of said first sidewall portion at said indented portion.

4,438,860

MAGNETIC TAPE CASSETTE

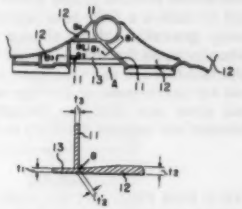
Masatoshi Okamura, and Haruo Shiba, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1981, Ser. No. 323,024

Claims priority, application Japan, Feb. 9, 1981, 56-16865[U]

Int. Cl.³ G11B *23/06*; B65H *7/48*; B65D *6/34, 1/46*

U.S. Cl. 220—4 B **3 Claims**



1. A resin molded magnetic tape cassette comprising:

(a) a bottom plate of an upper half casing;

(b) a projecting plate which extends outwardly from and is a continuation of said bottom plate; and

(c) an outer peripheral rib projecting vertically from the juncture between said bottom plate and said projecting plate, said outer peripheral rib being formed near the head receiving portion of said upper half casing,

wherein:

(d) said projecting plate has an at least substantially uniform thickness t_1;

(e) the central portion of said bottom plate has an at least substantially uniform thickness t_2 which is greater than the thickness t_1; and

(f) the portion of said bottom plate immediately inwardly of said outer peripheral rib tapers from the thickness t_2 to the thickness t_1 at the point where said outer peripheral rib projects from the juncture between said bottom plate and said projecting plate, whereby a white cloudy pattern in the resin at the juncture between said bottom plate and said projecting plate is substantially avoided.

4,438,861

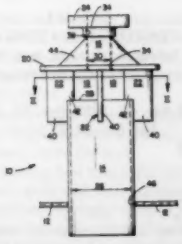
VENTED INLET FOR TANKS LOADED FROM PRESSURIZED TANKERS

James W. McGuffey, Lansing, Mich., assignor to Process Equipment Corporation, Belding, Mich.

Filed Oct. 6, 1981, Ser. No. 308,988

Int. Cl.³ B65B *3/04*

U.S. Cl. 220—86 R **12 Claims**



7. A vented inlet for a tank loaded from a pressurized tanker, said inlet reducing the possibility of damage to the tank from a surge of compressed air by venting the compressed air to the surrounding air before the compressed air enters the tank, said inlet comprising:

a lower pipe having an upper end;

a plurality of generally planar gusset members extending longitudinally from said upper end of said lower pipe, each of said gusset members being oriented generally radially with respect to said lower pipe, each of said gusset members having a first portion mounted on said lower pipe and a second portion remote from said lower pipe; and

an upper pipe having a lower end operatively supported on said second portions of said gusset members and an upper end to receive a filler hose connection, said upper pipe being generally axially aligned with said first pipe, whereby liquid flowing out of said lower end of said upper pipe falls through said vent space and into said lower pipe and any compressed air flowing out of said lower end of said upper pipe will pass through said vent space and between said support members to the surrounding air.

4,438,862

DEVICE FOR PREVENTING THE UNAUTHORIZED REMOVAL OF FUEL FROM THE TANK OF A MOTOR VEHICLE

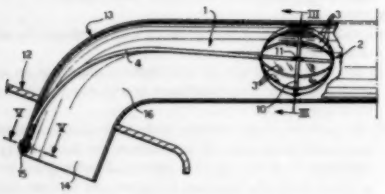
Eligio Bona, Turin, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Oct. 15, 1981, Ser. No. 311,804

Claims priority, application Italy, Oct. 20, 1980, 68604 A/80; May 15, 1981, 67652 A/81

Int. Cl.³ B65B *3/06*

U.S. Cl. 220—86 AT **11 Claims**



1. Anti-theft device for fitting within the filler pipe of a fuel tank of a motor vehicle to prevent the introduction into the filler pipe of a flexible hose for withdrawing fuel to the exterior of the tank, wherein the device comprises:

a body provided with a cylindrical core and a plurality of substantially planar closely spaced radial vanes extending outwardly from said core, said vanes lying in different planes which intersect each other along a common axis, and

a rod having a first end connected to the said body and means at the opposite end of said rod for anchorage within the filler pipe.

4,438,863

GAS VENTING FLOATING COVER

John V. Wilson, Islington, Canada, and William B. Kays, La Habra, Calif., assignors to Globe Linings, Inc., Long Beach, Calif.

Filed Aug. 17, 1981, Ser. No. 293,701

Int. Cl.³ B65D *51/16*

U.S. Cl. 220—227 **7 Claims**

1. A gas venting floating cover for a liquid container wherein said cover includes a sheet of flexible material for lying upon the contained liquid and for attachment to the container sides in fluid tight relationship, the sheet having excess material at its perimeter to form into a depending fold; flotation means attached to said cover and defining gas collection spaces for receiving gases evolving from said liquid; and gas collection means for receiving and carrying away gases collecting in said collection spaces, said cover being characterized in that:

said flotation means comprises generally parallel first and second strings of floats spaced apart to define a longitudinal passage, certain of said floats in each of said first and second strings defining transverse passages in communication with said longitudinal passage;

connecting means extending between and connecting together said first and second strings and preventing said first and second strings from moving apart; and,

said gas collection means comprises a conduit resting upon and mounted between said first and second strings in coextensive, overlying relation to said longitudinal passage, said conduit being buoyed in substantially stable relation by said first and second strings, said gas collection means further comprising flexible connector means and piping coupled to said conduit for bridging the perimetrical fold in said sheet of said cover.

4,438,864

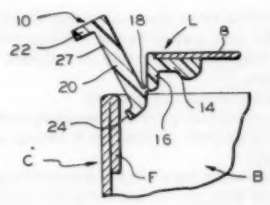
TAMPERPROOF CLOSURE

Charles R. Helms, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Jun. 9, 1982, Ser. No. 386,632

Int. Cl.³ B65D *41/32*

U.S. Cl. 220—265 **5 Claims**



1. In a tamperproof closure arrangement for a generally cylindrical container with a body wall having, adjacent the open end thereof, an internal flange presenting an axially inwardly facing abutment, an insertable lid comprising:

(a) a central portion, including a generally circular center panel;

(b) an annular outer rim;

(c) said rim being formed of molded plastic and including:

(i) a base portion joined to said center panel;

(ii) a skirt portion disposed radially outward of and pivotal with respect to said base portion, said skirt portion being molded at an oblique angle to said base portion;

(iii) a relatively thin, annular, integral hinge interconnecting said skirt portion and said base portion for accommodating pivotal movement of said skirt portion relative to said base portion to permit insertion of the lid into the container;

(d) said skirt portion including:

(i) a generally frusto-conical wall prior to insertion into the container;

(ii) an integral annular retaining flange extending radially outward from a lower portion of said frusto-conical wall for engagement with said container body wall, said lower portion being spaced axially downwardly from said hinge;

(iii) a second flange extending radially outward from an upper portion of said frusto-conical wall and defining with said retaining flange an annular channel for receiv-

ing said container body wall flange, said upper portion being spaced radially outwardly from said base portion and being spaced axially upwardly from said hinge;

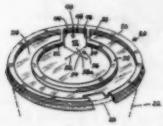
whereby when the lid is inserted into the open end of the container, the contact of the container with the lid causes said skirt portion to pivot with said retaining flange moving radially outwardly and with said second flange moving radially inwardly so that said retaining flange lockingly engages with the underside of said container body wall flange to prevent removal of the lid from the container without causing visible damage thereto.

4,438,865

ANTI-SPILL LID FOR A DRINKING CUP

Joseph J. Scattaregia, 112 Malvern Dr., Normal, Ill. 61761, assignor to Joseph J. Scattaregia, Normal, Ill.

Filed Apr. 11, 1983, Ser. No. 483,553
Int. Cl.³ B65D *41/26, 47/10*
U.S. Cl. 220—270 **4 Claims**



1. A lid for mounting on the rim of a drinking cup comprising:

a circular disk-like body having a circumferentially continuous, down-turned peripheral channel section engageable with the rim of the drinking cup;

the body having a stiffening arcuate rib spaced inwardly of the peripheral channel section, extending less than a full circle therewithin, and having circumferentially spaced opposite ends;

the body having a pair of circumferentially spaced stiffening transverse ribs extending transversely from the ends of the arcuate rib to the peripheral channel section;

the body having a tear-out drink tab between the transverse ribs, the sides of the tab being defined by weakened lines extending along the insides of the transverse ribs, the outer end of the tab being defined by a weakened line extending along the inside of the peripheral channel section between the transverse ribs, and the inner end of the tab comprising a manually liftable portion defined by intersecting weakened lines of a perforatable straw aperture;

whereby the intersecting weakened lines are common to the drink tab and the perforatable straw aperture; and

whereby further the lid is optionally usable in one mode in which a straw is inserted through the straw aperture while the straw engages the inner end portion of the tab, and in another mode in which the tab is removed to provide a larger, reinforced drink opening including part of the straw aperture.

4,438,866

PRESTRESSED DOME CLOSURE FLANGE

Albert A. Gegaregian, Sunnyvale; Dennis K. Kuruma, Milpitas, and Kenneth W. Lengel, Sunnyvale, all of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

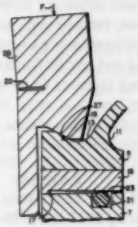
Filed Aug. 3, 1982, Ser. No. 404,672
Int. Cl.³ B65D *45/02, 45/30*
U.S. Cl. 220—319 **10 Claims**

1. A flange for prestressing the fibers adjacent inner and outer surfaces of a dome closure and adjacent said flange, comprising:

a ring made integral with said dome closure and extending radially outwardly thereof;

an annular rise disposed adjacent the outer periphery of said ring; and

said ring having a surface outboard of said dome closure for receiving a clamping force, which rotates said ring about



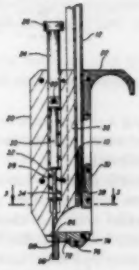
said annular rise producing compressive forces in said fibers adjacent the outer surface of said dome closure and adjacent said ring and tensile forces in said fibers adjacent the inner surface of said dome closure and adjacent said ring thereby reducing the forces in said fibers adjacent said ring when the dome closure is internally pressurized.

4,438,867

ELECTRICAL COMPONENT DISPENSING TOOL

David L. Mayne, Waterloo, and David Jahsman, Sherrill, both of N.Y., assignors to Industrial Design & Development Corp., Waterloo, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,269
Int. Cl.³ B65D *85/42*
U.S. Cl. 221—197 **24 Claims**



1. A manually operated tool for sequentially ejecting, in predetermined orientation, individual electrical components of predetermined dimensions which are gravity fed from a magazine holding a stacked plurality of such components, said tool comprising, in combination:

(a) a body portion having a first opening for receiving an open end of the magazine, and a second opening for ejection of components from the tool;

(b) means for positioning said magazine open end in a predetermined location with said body portion;

(c) an actuating member having a portion manually engagable by an operator for movement of said actuating member between first and second positions with respect to said body portion;

(d) movable means arranged adjacent said predetermined location for movement between a first position, effectively blocking exit of components from said magazine open end, and a second position, allowing exit of components from said magazine open end, in response to movement of said

actuating member between its first and second positions, respectively;

(e) a component transport member having an end portion movable between a first position adjacent said second opening and a second position immediately below said movable means to receive on said end portion a component fed by gravity from said magazine open end when said movable means is in its second position, in response to movement of said actuating member between its first and second positions, respectively; and

(f) an ejector portion effective to engage a component at said second opening and eject it from said tool upon movement of said actuating member to its second position.

4,438,868

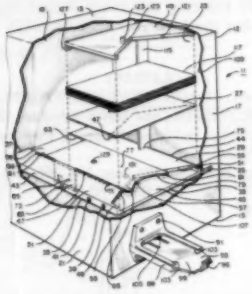
ENVELOPE VENDING MACHINE

Raymond M. Edwards, 1037 Keith Dr., Hurst, Tex. 76053

Filed Feb. 16, 1982, Ser. No. 348,851

Int. Cl.³ B65H *3/26*

U.S. Cl. 221—240 **7 Claims**



1. An envelope vending machine for dispensing single envelopes, comprising:

a housing having a closed top, a closed bottom, and sidewalls therebetween, and an envelope dispensing slot in one of said sidewalls;

a stationary slotted partition having upper and lower surfaces and front and rear edges supported in said housing generally parallel with said closed bottom, said partition having a recess formed in the front edge thereof in the shape of an envelope flap, said recess being adapted to receive the flap of an envelope to be dispensed, said slotted partition having a channel formed in the upper surface thereof which intersects said recess formed in said front edge;

a moveable envelope support member slidably received within said channel, said support member having a leading edge adapted to engage said envelope flap received in said partition recess and said support member having a depending flange received within said slot in said partition, said support member being reciprocable in said channel between an extended position for dispensing an envelope and a retracted position for receiving an envelope flap in said partition recess; and

a coin chute having a coin slide therein, said coin slide having a longitudinal extent received within said housing and engaging said support member depending flange whereby reciprocal movement of said coin slide in said coin chute reciprocates said envelope support member on said slotted partition to thereby dispense an envelope through said envelope dispensing slot.

4,438,869

DOSING DEVICE WITH BALL VALVE AND OPERATING METHOD

Peter Vierkötter, Leverkusen, and Paul-Otto Weltgen, Hilden, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

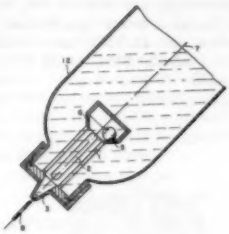
PCT No. PCT/EP81/00092, § 371 Date Feb. 8, 1982, § 102(e) Date Feb. 8, 1982, PCT Pub. No. WO82/00348, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 3, 1981, Ser. No. 348,065

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026067

Int. Cl.³ G01F *11/26*

U.S. Cl. 222—1 **5 Claims**



1. A dosing device with ball valve for attachment to a liquid container with a valve ball closing the discharge opening of the dosing device in a tilted position of the container comprising a ball valve, a valve ball guide tube having at least one lateral opening leading towards the container interior over its length, wherein the inside diameter of the valve ball guide tube is clearly greater than the ball diameter and the ball diameter is clearly greater than the width of the at least one lateral opening in the valve ball guide tube, said valve ball guide tube having a discharge opening, a sealing valve ball seat at its discharge end and a lower part opposite its discharge end expanding in funnel shape from the tube wall for a length corresponding to at least half the ball diameter to a cylinder having a solid circular bottom, the funnel shaped so that half the aperture angle formed between the tube centerline and the surface of the funnel-shaped area of the lower part is between about 45° and 60°, whereby the ball remains in the funnel-shaped area of the lower part without dropping into the tube in a tilted position of the container not exceeding half the aperture angle.

4,438,870

CAPTIVE DISPENSING CAP CONSTRUCTION

Morton Stull, Split Rock Rd., Boonton Township, Morris County, N.J. 07005

Filed May 20, 1981, Ser. No. 265,384

Int. Cl.³ B65D *47/20*

U.S. Cl. 222—48 **16 Claims**

16. A captive dispensing cap construction comprising, in combination:

(a) a tubular body part adapted to be carried by a container and having a discharge passage, said body part having a stopper extending upwardly from said passage,

(b) a screw cap part carried by said body part and surrounding said discharge passage,

(c) said screw cap part having a discharge opening into which the stopper extends when the screw cap part is screwed to its full-on position on the body part,

(d) said screw cap and body parts having two pairs of mutually engageable portions,

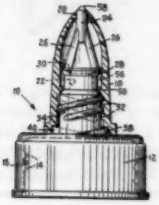
(e) one pair of mutually engageable portions comprising cooperable screw thread means respectively on said parts,

for moving the screw cap part axially on the body part as the screw cap part is turned,

(f) a lug disposed on the screw cap part,

(g) a stop shoulder on the body part, engageable with the lug of the screw cap part to halt turning of the latter as it is screwed to its full-on position,

(h) the screw thread means of the screw cap and body parts having sufficient backlash to enable the screw cap part to have an initial unscrewing turning movement from its fully screwed-on position without outward axial displacement, through an angle essentially in excess of 20° before tending to cause such displacement,



(i) said other pair of mutually engageable portions comprising a cam track on the body part and a follower portion on the screw cap part,

(j) said cam track having a first portion which lies in a plane substantially perpendicular to the axis of the screw cap part, and a second portion of spiral configuration, said cam track and follower portion becoming effective to move the screw cap part axially outwardly in response to the latter being turned through an angle essentially in excess of 20°, as the follower portion leaves the first portion of the cam track and engages the second portion thereof.

4,438,871

DISPENSER

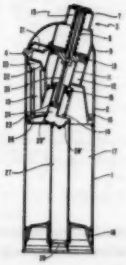
Josef Eckert, Mellrichstadt, Fed. Rep. of Germany, assignor to Wischerath and Schreiner KG, Mellrichstadt, Fed. Rep. of Germany

Filed May 26, 1982, Ser. No. 382,094

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121075

Int. Cl.³ B67D *5/52*

U.S. Cl. 222—137 **10 Claims**



1. A dispenser for pasty substances and/or liquids having a supply tank with an axially displaceable follower piston and an ejection device with an operating plunger, comprising a reciprocable metering piston in a pump chamber, the pump chamber being connected on one side to the supply tank and on the other to an outlet for the dispenser, a plug in said outlet biassed in the direction of closure, and further characterized in that a second pump chamber **23** of smaller diameter than the first pump chamber **14**, and having a second metering piston **24** is mounted coaxially of the first pump chamber, the second metering piston being connected to the plunger **3** and the second pump chamber **23** being connected to a second supply tank **27** within the first supply tank **17**, and ejection channel means for material from said second pump chamber.

4,438,872

DISPENSING APPARATUS

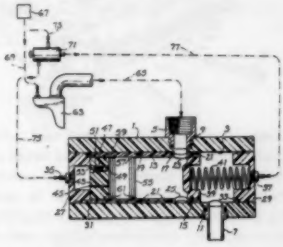
Dan W. Dooley, 6182 W. Dawn St., and Robert T. Bromps, 6239 SW. Edgewood, both of Lake Oswego, Oreg. 97034

Filed Jul. 20, 1981, Ser. No. 285,388

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ G01F *11/06*; B65D *88/54*

U.S. Cl. 222—217 **3 Claims**



1. A dispensing apparatus for pressurized viscous material and comprising,

an elongate body including end caps and defining a bore, said end caps each defining an air inlet port,

a sleeve slidably disposed within the bore and defining a chamber closed at its ends by a first plug and a second plug,

biasing means interposed between said second sleeve plug and an end cap of the elongate body to bias the sleeve to a loading position,

a piston within said sleeve,

a material inlet port on the body,

said sleeve defining an inlet port registerable with said inlet port on the body for the admission of pressurized material into said sleeve,

a material outlet port on said body,

said sleeve defining a discharge port registerable with said material outlet port on said body,

valve means in communication with a source of pressurized air and the air inlet port in said end caps and manually operable to alternately direct pressure via said end caps to the ends of said body defined bore, and

said first plug of the sleeve including a metering orifice for the admission of air in a metered manner to act on the piston within said sleeve to urge the sleeve to a discharge position and the piston along said sleeve to discharge sleeve contents.

4,438,873

GROUND DRIVEN TOP DRESSER UTILIZING SPECIAL CLUTCH MECHANISM

William C. Kaercher, Jr., Minneapolis, Minn., assignor to Turfco Manufacturing, Inc., Minneapolis, Minn.

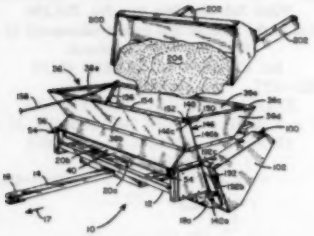
Filed Oct. 28, 1981, Ser. No. 315,756

Int. Cl.³ A01C *15/16*

U.S. Cl. 222—616 **18 Claims**

1. A top dresser adapted to be pulled across the ground comprising frame means, wheel means supporting said frame means, a hopper extending transversely of said frame means

having a lower opening through which material contained in said hopper is discharged, a conveyor belt mounted for movement beneath said hopper for receiving material discharged through said opening and moving such material rearwardly relative to the direction the dresser is pulled, a cylindrical brush mounted for rotation about an axis generally parallel to said hopper so as to engage and propel material from said belt into the ground, said wheel means including at least a first wheel subjacent the left side of said frame means and at least a second wheel subjacent the right side of said frame means, and



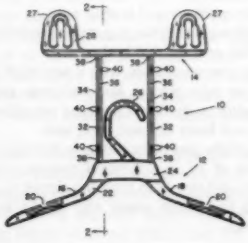
means connecting said conveyor belt and cylindrical brush to said wheel means so that said belt and brush are both ground driven by said wheel means, said means connecting said conveyor belt and said cylindrical brush to said wheel means including a remotely operated clutch comprising a multi-faced cam and a one-way clutch mechanism, said one-way clutch mechanism indexing said cam by one face each time it is actuated, and including a flexible actuator for actuating said one-way clutch mechanism, said overrunning clutches preventing said conveyor belt and said cylindrical brush from operating when the top dresser is pushed backwards.

4,438,874

UNITARY GARMENT HANGER SYSTEM

Jack M. Zuckerman, and Andrew M. Zuckerman, both of 110-11 Queens Blvd., Forest Hills, N.Y. 11375

Filed Aug. 21, 1981, Ser. No. 295,111
Int. Cl.³ A47J 51/084, 51/097
U.S. Cl. 223—88 17 Claims



16. A unitary hanger system comprising

first and second hanger elements,

and means formed unitary with and joining together said first and second hanger elements in a substantially flat condition,

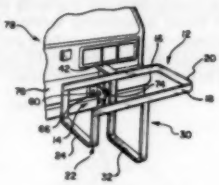
and said joining means permitting movements of said hanger elements relative to each other out of said substantially flat condition to a selected substantially side-by-side position and to positions on opposite sides of each other and including means permitting their movement to equal and different heights relative to the other.

4,438,875

WHEELCHAIR CARRIER

William E. Fritsch, 756 Buffalo Ctr., Carol Stream, Ill. 60187

Filed Apr. 22, 1983, Ser. No. 487,840
Int. Cl.³ B60R 9/06
U.S. Cl. 224—42.03 R 5 Claims



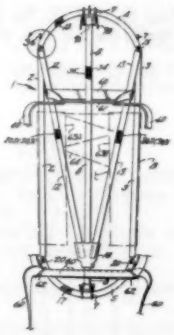
1. A wheelchair carrier comprising: a rigid basket framework, including a pair of sideframe members spaced apart to receive the width of a collapsed wheelchair therebetween, a crossbrace joining respective back ends of said sideframe members and defining a first outstop, a first pendant, U-shaped member joining respective front ends of said sideframe members to define both a second, opposed outstop and a roll-up step for use in raising a wheelchair into said framework, and a second pendant, U-shaped member attached intermediate the ends of said sideframe members and having substantially greater depth than said first U-frame member to define a wheelchair downstop; and coupling means for releasibly mounting said framework to an automotive bumper.

4,438,876

COMBINATION BACK PACK AND TENT FRAME

Russell G. Ward, 2050 SW. 71st Ave., Portland, Oreg. 97225

Filed Jun. 18, 1981, Ser. No. 275,062
Int. Cl.³ A45F 3/08
U.S. Cl. 224—154 13 Claims



1. A back pack frame having separable members which may be reassembled into a tent frame, said pack frame comprising,

tubular back pack frame members,

means coupling the tubular members to another in a detachable manner,

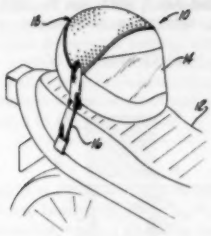
tent frame components stowed in juxtaposition within certain of said tubular members, said tent frame components arranged in pairs with each pair axially extractible from one of said frame members and thereafter positionable to constitute a part of the tent framework, hinge means joining the tent frame components into said pairs.

4,438,877

HELMET RESTRAINING DEVICE

William S. Jackson, P.O. Box 7370, Ann Arbor, Mich. 48107

Filed Jun. 13, 1983, Ser. No. 503,525
Int. Cl.³ B62J 11/00
U.S. Cl. 224—275 9 Claims



1. A restraining device for securing motorcycle helmets or the like to cycles comprising:

a seat strap;

a pair of anchoring means releasably secured at each end respectively of the seat strap for engaging the vehicle and securing the seat strap across a top surface of the vehicle;

means for adjusting the length of the seat strap to insure a tight fit;

a pair of connector rings slidably mounted upon the seat strap;

a restraining cup adapted to cover a substantial section of the top surface of the helmet; and

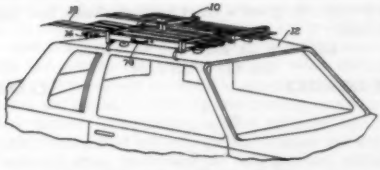
a pair of fastener means fixedly secured at opposite ends of the restraining cup, each fastener including means for releasably securing each end respectively of the restraining cup to each of the connector rings thereby securing the restraining cup to the seat strap and the helmet therebetween.

4,438,878

SKI RACK AND CARRIER

Terence M. Heslop, 331 Sussex La., Lake Forest, Ill. 60045

Filed Nov. 12, 1982, Ser. No. 441,157
Int. Cl.³ B60R 9/04
U.S. Cl. 224—319 21 Claims



1. A carrier for skis and ski poles for mounting on a roof of an automobile or similar structure comprising:

rack means,

mounting means on the rack means to securely mount the rack means to the roof,

a pair of substantially identical carrier frames adapted for removable mounting adjacent to each other to the rack means,

each carrier frame having a rectangular central frame member and top and bottom pairs of pivotal arms, each pivotal arm connected at one end to the central frame member, the pivotal arms spaced apart from each other with the top pair and bottom pair of arms flanking the central frame member, each pair of pivotal arms adapted to receive and secure multiple sets of skis or ski poles at two points between the arms and the central frame member,

a locking end member for securing the top pivotal arms to the bottom pivotal arms in a locked relationship with each other and the central frame member thereby securing the skis and ski poles between the pivotal arms and the central frame member, and

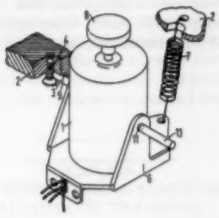
locking means to secure the carrier frame to the rack means, whereby the carrier frame can be removed from the rack means and be easily transported while securely retaining the skis and ski poles.

4,438,879

SUSPENSION FOR THE PIVOTABLY SEATED TAPE DRIVE MOTOR IN A CASSETTE MAGNETIC TAPE DEVICE

Guttorm Rudi, Fjellhamar, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Mar. 30, 1982, Ser. No. 363,436
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112802
Int. Cl.³ B65H 17/20; F16H 13/10; G11B 15/28
U.S. Cl. 226—188 3 Claims



1. A suspension for pivotably seating a capstan motor in a cassette magnetic tape device, comprising: a bearing fork having two free ends and a bearing retaining aperture in each free end, the bearing fork being shaped so as to receive the capstan motor in a seating position against a base portion thereof between the free ends; a spring element connected between the bearing fork and a portion of a principal frame of the tape device so that a capstan wheel of the motor is pressed against a drive wheel of the cassette with a defined force; a bearing neck freely positioned in and through each of the bearing retaining apertures, each of the bearing necks having a bearing end facing and in contact with the motor; opposite ends of each of the bearing necks being received against respective inside corner edges of portions of the principal frame of the tape device; respective sink screws having heads at each of said opposite ends of the bearing necks and positioned at the respective corner edges such that an under surface of the head of each of the sink screws clamps the respective bearing neck at the inside corner edge; and the sink screws being arranged such that by turning one of the other sink screws the respective bearing neck abuts against an end stop at the corner edge while the other bearing neck is moved along the corner edge by the action of the sink screw when turning so as to tightly clamp the capstan motor between the two bearing ends of the bearing necks.

4,438,880

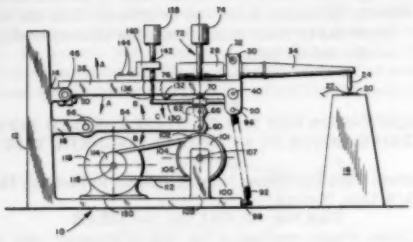
ULTRASONIC WIRE BOND TOUCHDOWN SENSOR

Michael C. Smith, and Hal W. Smith, Jr., both of Costa Mesa, Calif., assignors to Orthodyne Electronics Corporation, Costa Mesa, Calif.

Filed Aug. 17, 1981, Ser. No. 293,303
Int. Cl.³ B23K 1/06
U.S. Cl. 228—1 A 24 Claims

1. An ultrasonic bonding device comprising an ultrasonic bonder having a transducer that is connected to a tool for ultrasonic bonding or welding that is in turn driven by a gener-

ator at a specific voltage to provide ultrasonic vibrations for welding with a support for said tool that moves upwardly and downwardly driven by a motor wherein the improvement comprises:



means for detecting increased impedance when the tool makes contact with a work surface by virtue of the fact that the transducer is dampened; and,

means for stopping the motor when such impedance is increased which is tantamount to touchdown.

4,438,881

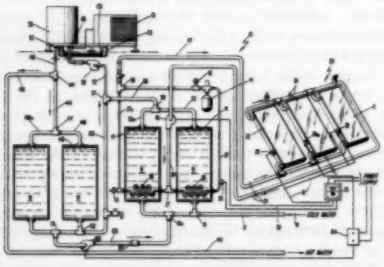
SOLAR ASSISTED HEAT PUMP HEATING SYSTEM

Joseph C. Pendergrass, 1283 Wessel Rd., Gainesville, Ga. 30501

Filed Jan. 27, 1981, Ser. No. 228,919

Int. Cl.³ G05D *23/00*; F25B *27/02*

U.S. Cl. 237—2 B **31 Claims**



30. In a heat pump including a compressor, an evaporator and heat exchanger means interconnected in a refrigerant flow relationship, and a fan driven by motor means for circulating ambient air over said evaporator to extract heat from the air; the improvement comprising refrigerant operating parameter sensing means for detecting a refrigerant operating parameter after said refrigerant fluid passes through said evaporator, and modulating means responsive to said refrigerant sensing means for controlling the flow of ambient air through said evaporator to maintain a predetermined parameter range of said refrigerant fluid, said modulating means being operative to restrict air flow during periods of high ambient temperature thereby enabling said heat pump to operate at higher than normal outdoor temperatures.

4,438,882

NOZZLE, PARTICULARLY FOR BURNERS

Herbert Frehner, Boppelsen, Switzerland, assignor to Satronic AG, Regensdorf, Switzerland

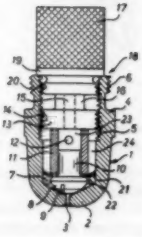
PCT No. PCT/CH81/00075, § 371 Date Mar. 8, 1982, § 102(e) Date Mar. 8, 1982, PCT Pub. No. WO82/00333, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 7, 1981, Ser. No. 359,651

Claims priority, application Switzerland, Jul. 10, 1980, 5305/80

Int. Cl.³ B05B *1/14*

U.S. Cl. 239—462 **1 Claim**



1. A nozzle for atomizing a fluid especially for use in burners, comprising: a hollow nozzle casing having an inflow side and an exit bore, a filter located at said inflow side and having orifices with a free passage, a whirl member in said casing and having a whirl member head at said exit bore, an annular channel between the inner wall of said casing and said whirl member, and an annular protective member formed by a sheet of sieve material in said annular channel at said whirl member head and having orifices with a free passage larger than the free passage of said filter orifices, said sheet being positioned between said whirl member head and an assembly sleeve, said annular channel being defined by the inner wall of said nozzle casing and the outer wall of the assembly sleeve, whereby impurities contained in the fluid are retained in the filter, and impurities originating from the nozzle are retained by said protective member.

4,438,883

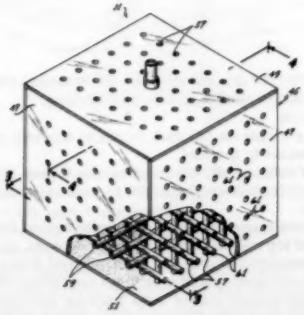
DYNAMIC PRESSURE ATTENUATOR AND METHOD

Stanley W. Zison, Irvine, and Robert N. Turer, Long Beach, both of Calif., assignors to Getty Synthetic Fuels, Inc., Signal Hill, Calif.

Filed Aug. 23, 1982, Ser. No. 410,333

Int. Cl.³ B05B *1/14*

U.S. Cl. 239—553.3 **24 Claims**



1. A dynamic pressure attenuator comprising:

a housing;

wall means defining a plurality of wind passages extending through the interior of said housing, said wind passages being open to allow the wind to pass therethrough;

said wall means having a plurality of ports extending through the wall means and providing communication between the interior of the housing and at least some of said wind passages whereby when the wind passes through said wind passages, the dynamic pressure in said housing outside of said wind passages is substantially less than the dynamic pressure within said wind passages through which the wind is passing; and

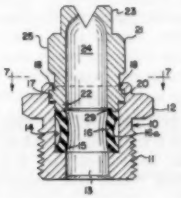
said housing having means for permitting a gas to be discharged into the interior of said housing whereby such gas can flow through at least some of said ports and associated wind passages to the atmosphere.

4,438,884

QUICK DISCONNECT NOZZLE

Edward J. O'Brien, Barrington; Gary A. Paulsen, Geneva, and Daniel J. Filicicchia, Aurora, all of Ill., assignors to Spraying Systems Company, Wheaton, Ill.

Filed Nov. 2, 1981, Ser. No. 317,199
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—600 **7 Claims**



1. A quick disconnect coupling comprising first and second coupling members each having an internal fluid passageway, said coupling members being selectively engageable with each other and at least one of said members being adapted for connection to a source of fluid so as to permit fluid transfer through said passageways, one of said coupling members defining an internal chamber having an annular seat at one end thereof, an annular sealing member positioned in said chamber with one end thereof disposed against said annular seat, said sealing member having an inwardly bowed portion intermediate its ends defining an annular space between the outer periphery of said sealing member and said chamber, the other of said coupling members having an annular end that is engageable with the other end of said sealing member and positionable into said chamber for axially compressing the sealing member between said annular end and annular seat while forcing said bowed section radially inwardly to accommodate such compression, and means for retaining said coupling members in said sealing member compressing relation whereby said sealing member forms a fluid seal between said annular end and annular seat and upon an increase in fluid pressure within said coupling member passageways said bowed sealing member portion is forced radially outwardly causing an increase in axial sealing pressure between said sealing member and said annular seat and annular end.

4,438,885

MANURE LOADER

Mervin G. Martin, Myerstown, Pa., assignor to Hedlund Manufacturing Co., Inc., Boyceville, Wis.

Continuation of Ser. No. 119,523, Feb. 7, 1980, abandoned. This application May 3, 1982, Ser. No. 374,549
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—101 B **16 Claims**

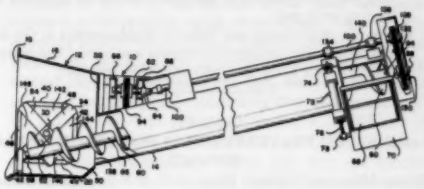
1. In a loading apparatus suitable for loading liquid and semi-liquid materials, the combination of:

scoop means to pick up a load of material;

the scoop means including enclosing sidewalls defining an open front to admit the material therethrough and a right side and a left side;

auger means rotatable within the scoop means to direct the material from one side toward the other,

the auger means comprising a shaft and blades rotatable with the shaft,



at least some of the blades being provided with openings suitable to chop the material as the blades are rotated;

loading means in material communication with the scoop means to pick up the directed material and to unload the material at a location remote from the scoop means, and

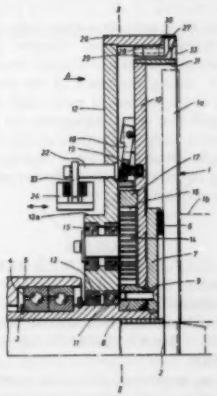
drive means to rotate the auger means and drive the loading means.

4,438,886

DOUBLE WIRE-WINDING MACHINE WITH AUTOMATIC TRANSFER

Marc Meisser, Meyrin; Kurt Weber, Echandens, and Louis Veyrassat, Rolle, all of Switzerland, assignors to Maillefer S.A., Ecublens, Switzerland

Filed Apr. 3, 1981, Ser. No. 250,917
Claims priority, application Switzerland, Apr. 11, 1980, 2813/80; Dec. 10, 1980, 9110/80
Int. Cl.³ B65H *54/02*
U.S. Cl. 242—25 A **19 Claims**



1. A double winding machine with automatic transfer for continuously winding metal wire on reels which each have a barrel, comprising:

two reel supports with parallel drive shafts, each equipped with a snagging mechanism for snagging a leading end of wire to be wound;

each snagging mechanism comprising a hook-bearing disk with a hook, an uncoiling member, and bearing means for

supporting said hook-bearing disk and said uncoiling member coaxially with respect to the reel and for permitting a relative displacement from an initial position to a displaced position between said disk and said uncoiling member;

disengageable coupling means for rotationally coupling said disk, said uncoiling member and said reel;

means for translationally disengaging said coupling means;

means for braking said hook-bearing disk to produce a lag of said disk with respect to said reel in order to lengthen said leading end; and

means for performing said relative displacement at the time of said lag, said lengthened leading end being thus retained through said hook and said uncoiling member.

4,438,887

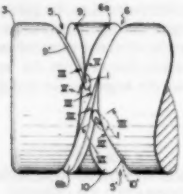
GROOVED TRAVERSE DRUM FOR USE IN DRUM WINDER

Masao Mino, and Takeshi Ohno, both of Yao, Japan, assignors to Kabushiki Kaisha Mino Seisakusho, Osaka, Japan

Filed Apr. 26, 1982, Ser. No. 372,004

Int. Cl.³ B65H *54/48*

U.S. Cl. 242—43.2 **11 Claims**



1. A grooved traverse drum having a spiral yarn guide groove in the peripheral surface thereof, the yarn guide groove including at least one crossover point where a shallow groove portion is interrupted by a deep groove portion, said deep groove portion having sidewalls, wherein a cylindrical abrasion-resistant means is inserted into said drum in the interrupted shallow groove portion, said cylindrical abrasion-resistant means having a notch forms substantially the whole of the shallow groove portion at the crossover point such that yarn guided by said shallow groove portion only contacts the notch in said abrasion-resistant means, wherein said notch in the abrasion-resistant means has a V-shaped cross-section defining two legs of a V, taking the place of the interrupted shallow groove portion at the crossover point, and one of the legs of the V of the notch that serves as a guide for the yarn entering the shallow groove portion, is raised on the drum constituting material, while the other leg of the V that serves as a guide for the yarn passing out of the shallow groove portion, is indented beneath the drum constituting material.

4,438,888

SELF-ALIGNING WEB REEL

Hugh D. Seelinger, Tucson, Ariz., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 10, 1982, Ser. No. 356,879

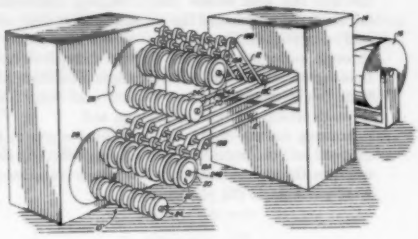
Int. Cl.³ B65H *19/04*

U.S. Cl. 242—56.9 **22 Claims**

1. Self-aligning apparatus driven by a rotatable shaft for winding a web of material comprising in combination:

spline means affixed to the rotatable shaft including at least one set of serrations spaced around the periphery of said spline means with a shaped cutout in at least one side of each of said serrations with each set spaced at the same axial distance along the shaft;

a reel including an outer circular hub for accommodating the web of material and an inner circular hub interconnected to said outer hub, said inner hub including elongated protrusions spaced around its inner diameter of a width to slide between two of the spaced serrations of said spline means, said protrusions shaped to seat into the associated shaped cutout of said serrations for aligning



said reel with the shaft, the web of material and for rotatable driving said reel with said spline means and shaft; and

tension means for adjusting the tension of the web of material as the web is wound on said reel.

4,438,889

SYSTEM FOR DECELERATING THE DRIVE OF A WEB-WINDING APPARATUS

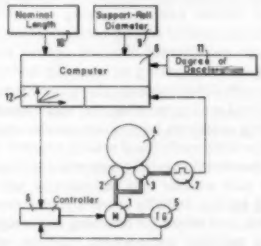
Herbert Schonmeier, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,214

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101360

Int. Cl.³ B65H *17/12, 25/32*

U.S. Cl. 242—67.1 R **3 Claims**



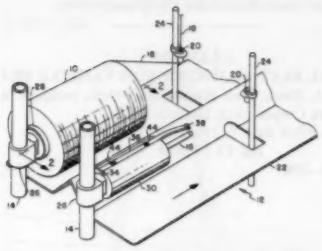
1. In a process for winding a web to obtain a desired nominal length, wherein the drive of the web winding apparatus is decelerated to a standstill, the improvement wherein the step of decelerating comprises: selecting a desired nominal length of the web, determining the instantaneous web speed; and decelerating the drive, at a time determined as a function of the selected nominal length and the instantaneous web speed, with a preset degree of deceleration obtained from two differenct curves of deceleration, one of which would result in the nominal length of the web being undershot, while the other would result in its being overshot if either curve alone were effective upon initiation of deceleration, continuously determining the instantaneous degree of deceleration and switching between said two curves whenever the instantaneous degree of deceleration indicates the nominal length would be undershot or overshot.

4,438,890

BOBBIN LOCK

William J. Schroder, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 19, 1982, Ser. No. 399,462
Int. Cl.³ B65H 49/02; D03J 5/08
U.S. Cl. 242—130 3 Claims



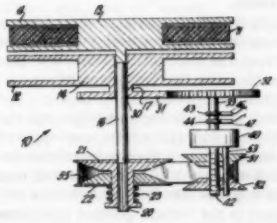
3. A creel for a yarn consuming machine comprising a plurality of yarn package support members, each yarn support member having a creel pin projecting outwardly therefrom, an elongated, substantially rigid adaptor member mounted on each of said creel pins, means to secure said adaptor members to said creel pins, a yarn package telescoped over said adaptors having a core extending therebeyond, a groove in the outer surface of each of said adaptors, a second means mounted in each of said grooves between said core and said adaptor member engaging the end of said core to prevent said core from sliding off said adaptor, said second means including an elongated spring steel member mounted to the adaptor member, said spring steel member having an upstanding flange on one end engaging the end of said core and a cap member connected onto the end of said core with a portion thereof engaging and maintaining said upstanding flange into engagement with said core.

4,438,891

TAPE TRANSPORT SYSTEM

Selmer L. Wilg, Plainfield, N.J., assignor to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed May 26, 1981, Ser. No. 266,658
Int. Cl.³ B65H 59/04; G11B 15/32, 15/28
U.S. Cl. 242—190 5 Claims



1. A tension control system for a tape transport arrangement of the type wherein a first reel having tape wound thereon supplies tape which is drawn therefrom by a tape drive mechanism, the drawn tape being collected on a second reel, the first and second reels being mechanically coupled to first and second shafts, respectively, said second shaft having first and second independently rotatable portions, the first portion of said second shaft being coupled to said second reel, the tension control system comprising:

tension sensing means for detecting a tensile force in the tape as it is collected onto the second reel and providing a tape tension signal which corresponds to said tensile force;

first and second variable ratio coupling members for rotatively coupling the first and second shafts to one another, whereby rotation of the first shaft is coupled to the second shaft to rotate the second shaft at a rate of rotation corresponding to the selected ratio with respect to a rate of rotation of the first shaft, said selected ratio of said rate of rotation of the first and second shafts being selectable within a predetermined range of ratios; said variable ratio coupling members comprising flexible drive transmission means for mechanically interconnecting said first and second coupling members, said first and second variable coupling members each comprising first and second pulley halves, each said pulley half having a central axis of rotation and a respective friction surface for engaging said flexible drive transmission means, said first and second pulley halves being coaxially movably arranged with respect to one another along said central axis of rotation; and

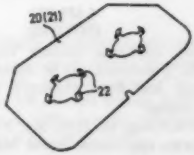
servo motor means responsive to said tape tension signal from said tension sensing means, said servo motor means being coupled between said first and second portions of said second shaft to provide relative rotation between said first and second portions of said second shaft, said second portion of said second shaft being coupled to said second variable coupling member for producing said relative coaxial displacement between said first and second pulley halves, thereby to select said selected ratio of said rate of rotation of the first and second shafts.

4,438,892

TAPE CASSETTE, ESPECIALLY A MAGNETIC TAPE CASSETTE

Horst Fitterer, Mannheim; Hubert Koob, Willstaett, and Bert Nestler, Seelbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 22, 1982, Ser. No. 341,885
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 8101456[U]
Int. Cl.³ G03B 1/04; G11B 15/32
U.S. Cl. 242—199 9 Claims



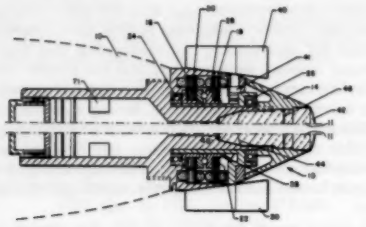
2. A tape cassette, especially a magnetic tape cassette, comprising a housing, at least one hub rotatably mounted on a collar on the housing, a roll of tape wound on the said one hub having at least one central recess, at least one aperture in the housing which allows a drive spindle to enter the cassette to drivably engage the said one hub and which is surrounded by the said collar, and at least one liner located between the said one hub and the housing and provided with a hole therein to allow the drive spindle to pass through the said one liner to engage the said one hub, wherein adjacent to the hole in the said one liner, the said one liner is provided with at least one raised bearing portion which projects into the said central recess in the said one hub and thereby resiliently supports the said one hub radially and axially, preventing it from making contact with the said collar.

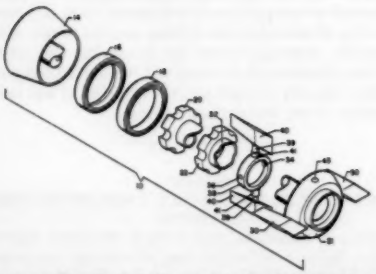
4,438,893

PRIME POWER SOURCE AND CONTROL FOR A GUIDED PROJECTILE

Timothy B. Sands, Acton, Mass., and Ronald R. Sinclair, Moultonboro, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 10, 1973, Ser. No. 392,715
Int. Cl.³ F42B *15/02*
U.S. Cl. 244—3.21 **11 Claims**





4. In a projectile including a main housing capable of being spun at high speeds and a canard frame capable of being despun and having deflectable canards thereon, wherein the improvement comprises:

a set of windings coupled to said main housing;

a rotor coupled to said deflectable canards; and

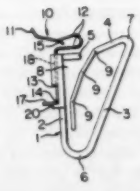
means for applying electrical signals to said windings to occasion deflection of said canards.

4,438,894

HOLDER

Koichi Yaotani, Akikawa; Minoru Yoshida, Hachiohji, and Seiichi Sato, Yokohama, all of Japan, assignors to Nissan Motor Corp. and Kato Hatsujyo Kaisha Ltd., both of Kanagawa, Japan

Filed Aug. 10, 1981, Ser. No. 291,290
Claims priority, application Japan, May 15, 1980, 55-115779
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—73 **4 Claims**



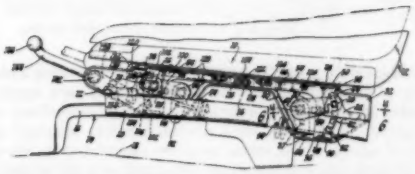
1. A fitting to be used in combination with a holder comprising a base plate having a hooking projection on the inner side of one end thereof, a bent piece bent inwardly of said base plate and integrally connected to the other end of said base plate, and a pressing piece folded into between said bent piece and said base plate and integrally connected to the end of said bent piece, a holding space being formed between said base plate and said pressing piece, said fitting comprising a mounting portion having an upwardly warped end portion bent into an inverted U-shape, a flat plate portion extending downwardly from the mounting portion and an abutting portion outwardly bent from the lower end of the flat plate portion.

4,438,895

VERTICAL SEAT ADJUSTER FOR VEHICLE SEATS

Richard W. A. Rees, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1982, Ser. No. 383,471
Int. Cl.³ F16M *11/24*
U.S. Cl. 248—396 **5 Claims**



1. A seat support mechanism for mounting a vehicle seat on a vehicle for vertical adjustment thereof relative to the vehicle comprising, in combination,

an elongate seat support for supporting the seat and including a generally vertically directed slot in a first portion thereof,

spaced first and second pivot means mounted on the vehicle, the first pivot means extending through the slot of the seat support,

a lever having one end thereof rotatably secured to the first portion of the seat support and the other end thereof rotatably secured to the first pivot means,

means pivotally mounting a second portion of the seat support to the second pivot means,

rotation of the lever about the first pivot means causing the first portion of the seat support and lever to rotate relative to each other to vertically adjust the first portion of the seat support as the slot of the seat support moves vertically relative to the first pivot means and the second portion of the seat support rotates relative to the second pivot means,

a lock plate including a series of detent means, each detent means representing a vertical position of the seat support relative to the first pivot means and being selectively engageable with the first pivot means to lock the seat support in such position,

cooperating means on the lock plate and the seat support mounting the lock plate on the seat support for movement therewith and sliding movement relative thereto between

(1) a locked position wherein one detent means of the lock plate engages the first pivot means to lock the seat support in the vertical position represented by the one detent means by blocking relative rotational movement between the seat support and lever, and

(2) a released position wherein the one detent means of the lock plate is disengaged from the first pivot means to permit relative rotational movement between the seat support and lever as the seat support moves to a different vertical position relative to the first pivot means, return of the lock plate to locked position engaging another detent means of the lock plate with the first pivot means to lock the seat support in the vertical position represented by such detent means,

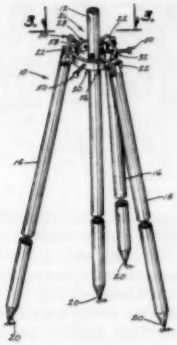
means biasing the lock plate to locked position, and, release means for moving the lock plate to released position.

4,438,896

SEGMENTED COLLAR TRIPOD FOR HOLDING SURVEYOR'S STAKE

George W. Hall, 3200 Viking Dr., Sioux City, Iowa 51104

Filed Sep. 28, 1981, Ser. No. 305,916
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—523 1 Claim



1. A tripod for holding a surveyor's stake comprising:

collar means comprising at least three collar segments, each of said collar segments comprising an arcuate portion having opposite ends, each of said opposite ends having a hinge flange extending radially outwardly with respect to the arc of curvature of said arcuate portion, said flanges each having a bolt receiving hole therein;

at least three legs, each having an upper end and a lower end;

said collar segments being positioned in end to end relation to form a continuous circle with said hinge flanges or the adjacent ends of said segments being paired in facing spaced apart relation with said bolt receiving holes of said paired spaced apart flanges being in registered alignment;

said upper ends of said legs having a surface for mating engagement with said hinge flanges and each leg being interposed between one of said spaced apart pairs of flanges,

said upper ends of said legs each having a bolt receiving hole in registered alignment with said bolt receiving holes of said one spaced apart pair of flanges;

a bolt extending through each of said registered pairs of bolt receiving holes in said pairs of flanges and also extending through said bolt receiving hole in said upper end of the one of said legs therebetween;

said bolt having a head at one end thereof and nut means threadably engaging the opposite end thereof to permit threadable adjustment of the tightness with which said head and nut press said pair of flanges and said upper end of said leg together whereby said legs can be selectively pivoted into a desired position and locked into that position;

said collar segments and said legs when fully assembled forming a stake receiving opening located centrally with respect to the circle formed by said segments,

holding means connected to said collar means for grasping and holding a vertically disposed surveyor's stake extending through said stake receiving opening to a point adjacent the ground surface,

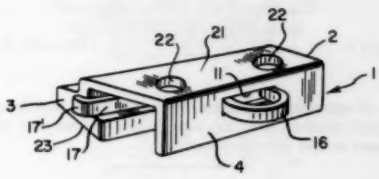
at least three thumb screws each threadably extending through one of said collar segments in a radial direction with respect to said stake receiving opening; each of said thumb screws having an inner radial end adapted to move towards and retentively engage a surveyor's stake within said stake receiving opening in response to rotation of said thumb screw so as to hold said stake in a vertical position, each of said legs being pivotable independent of one another in a substantially unlimited arc about the axis of said bolt extending through said bolt receiving hole in said leg.

4,438,897

HEADRAIL INSTALLATION BRACKET

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Rool Catootje, Netherlands Antilles

Filed Aug. 2, 1982, Ser. No. 404,294
Int. Cl.³ F16M *13/00*; A47H *1/14*
U.S. Cl. 248—544 6 Claims



1. A venetian blind headrail installation bracket for mounting of a U-shaped venetian blind headrail to a frame member, characterized in having a body including first and second body portions extending parallel to the longitudinal axis of the U-shaped headrail adapted to be mounted thereby, mounting means on said body adapted to mount said bracket to a frame member, an outwardly facing supporting member on said first body portion adapted to support a first edge of a U-shaped headrail, abutment means on said body, a slot-like opening in said second body portion, and a resilient spring member having an extended portion being supported on one side by said abutment means and on an opposite side by said extended portion extending through said opening outwardly of said body with said extended portion being adapted to support a second edge of said U-shaped headrail and said extended portion being movable towards said abutment means against the force of said spring means to allow disengagement of the first edge of a U-shaped headrail from said outwardly facing supporting member.

4,438,898

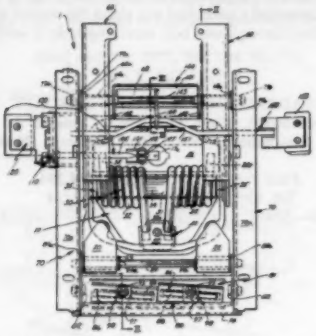
CHAIN CONTROL LOCKING ASSEMBLY

Jack R. Knoblauch, Byron Center; Duane M. Beukema, Grand Rapids, and Kenneth W. Hozeski, Grandville, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 1, 1980, Ser. No. 145,622
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—561 30 Claims

1. In a chair control having a stationary member for mounting to a base, a tiltable member pivotally mounted with respect to said stationary member, bias means operably connected between said stationary and tiltable members for controlling the rate of tilt of said tiltable member with respect to said stationary member and for biasing said tiltable member to a normal position, and means for locking said tiltable member with respect to said stationary member, the improvement in said chair control comprising: said locking means including a rigid member movably mounted on said chair control; a pivotally mounted rod having a deviation therein defining a lever, said lever engaging said rigid member and pivoting said rigid member when said rod is twisted, said rigid member being of such a configuration and having such an orientation in its mounting to said chair control that when in said locking position, it extends from a position of operable engagement with said tilting member to a position of operable engagement with

said stationary member, thereby preventing relative movement of the two, and such that when in said unlocking position, it is



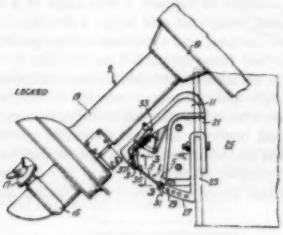
out of operable engagement with one of said tiltable and stationary members whereby said tiltable member can tilt with respect to said stationary member.

4,438,899

TRANSPORT BRACKET FOR OUTBOARD MOTORS

Dale J. Perkins, 704 W. Grand, and Leon L. Lincicum, 222 S. 2nd, both of Union, Oreg. 97883

Filed Jan. 6, 1982, Ser. No. 337,399
Int. Cl.³ F16M *1/00*
U.S. Cl. 248—642 **3 Claims**



1. In an outboard motor pivotally connected to a clamp for securing the outboard motor to a transom of a boat, wherein the clamp includes a locking pin engageable through aligned apertures provided in a pair of spaced lock arms and the motor includes at least one thrust surface for engaging the locking pin, the improvement comprising means for maintaining the motor in a desired position of outward tilt with respect to the locking pin including:

(a) an elongate thrust member for engaging the thrust surface;

(b) a hollow cylindrical pivot member disposable between the spaced lock arms and of sufficient internal diameter for receiving the locking pin therethrough and permitting free pivotal movement of the pivot member about the locking pin;

(c) a bridging member including opposed ends secured to substantially the midpoints of the thrust and pivot members for defining a generally H-shaped configuration;

(d) the bridging member being of a substantially flat web-shaped configuration and of sufficient length for disposing the motor at an angle with respect to the vertical when the thrust member is engaged with the thrust surface; and

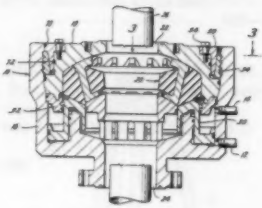
(e) the pivot and thrust members being of substantially the same length.

4,438,900

LOCKING MECHANISM FOR ANNULAR BLOWOUT PREVENTER

Gary R. Schaeper, and Richard A. Olson, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 5, 1980, Ser. No. 156,722
Int. Cl.³ E21B *33/06*; F16L *21/08*
U.S. Cl. 251—1 B **12 Claims**



1. In an annular blowout preventer adapted for use on an oil or gas well rig, and having a lower housing, an upper housing, a resilient sealing means therein, and a piston for actuating said sealing means, the improvement in locking means for securing the upper housing to the lower housing, comprising:

a split circular latch ring having a plurality of teeth on its outer surface, said teeth angled outwardly and downwardly, said ring having a tapered surface on its inner surface tapered downwardly and inwardly,

said lower housing having a plurality of locking grooves contoured to mate with said teeth,

said upper housing having a seating surface for engaging said lower housing, and having a shoulder for engaging the lower edge of said latch ring,

a locking ring having a tapered surface on its outer surface contoured to mate with the tapered inner surface on said latch ring, and telescopically engaging said upper housing, and

securing means for securing said locking ring to said upper housing whereby tightening said securing means produces downward movement of said locking ring relative to said upper housing, said downward movement forcing said latch ring outward and forcing said teeth outward and down the mating contours of said locking grooves, said teeth and said locking grooves including surfaces which are spaced from each other insuring the downwardly movement of said latch ring and said upper housing to seatingly engage said seating surface of said upper housing with said lower housing and to lock together said housings.

4,438,901

APPARATUS FOR TENSIONING A STUD AND METHOD OF DOING SAME

Bobby J. Reneau, and Bruce E. Morris, both of Houston, Tex., assignors to Gripper, Inc., Houston, Tex.

Filed Jan. 25, 1982, Ser. No. 342,235
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 A **9 Claims**

1. An apparatus for tensioning a stud extending from a surface, comprising:

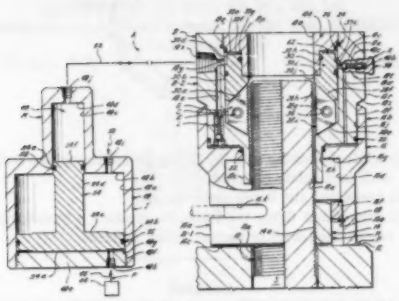
a body adapted to be removably mounted about the stud extending from the surface, said body including a first body member and a second body member;

said first body member having a surface engaging end and a chamber end, said surface engaging end for engaging the surface and said chamber end for receiving said second body member;

said second body member having a stud bore therethrough adapted to receive the stud therein;

gripper means surrounding said stud bore of said second body member for gripping the stud;

pressure force means acting within said body for moving said gripper means and said second body member, said pressure force means moving said gripper means into engagement with the stud, and said pressure force means moving said second body member from a contracted position, wherein said gripper means engages the stud, to



an expanded position, wherein said gripper means tensions the stud, thereby tensioning the stud;

regulation means operably connected to pressure force means for automatically regulating radial movement of said gripper means into engagement with the stud prior to said second body member moving from said contracted position to said expanded position; and,

amplifier means operably connected to said pressure force means for applying an amplified vacuum releasing force.

4,438,902

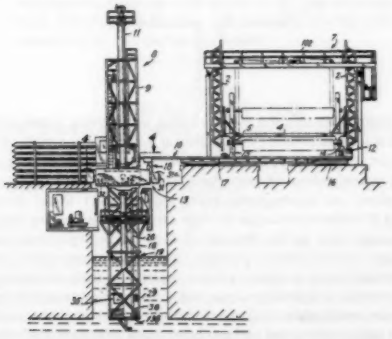
PIPE STRING LIFT SYSTEM

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Division of Ser. No. 108,122, Dec. 28, 1979, Pat. No. 4,365,787. This application Nov. 2, 1981, Ser. No. 382,365

Int. Cl.³ B66F *1/00*

U.S. Cl. 254—106 **12 Claims**



1. A system for lifting and supporting a string of downwardly extending pipe from a floating surface vessel, the system comprising a floating surface vessel having a hull; a platform pivotally connected to the hull of the surface vessel about two horizontal, transverse axes of rotation, the platform having a central opening therethrough;

main vertical support means, secured to the platform and arranged about the central opening and designed to vertically support a downwardly extending pipe;

lateral holding means supported from the platform and arranged about the center line of the central opening but located substantially not higher than the bottom of the hull of the surface vessel, and so designed to contact a pipe supported by the main support means so that lateral movement is limited in the portion of the pipe extending between the lateral holding means are the main support means without providing any substantial vertical support for the pipe.

4,438,903

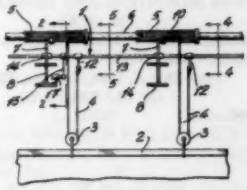
OBSTACLE DETECTOR FOR A DESCENDING OR ASCENDING LOAD

Pierre Gagnon, 5637 Wilderton Ave., Montreal, Canada H3T 1S1, and Pierre Laforest, 1945 Bruxelles St., Montreal, Canada (H1L 5Z5)

Filed May 7, 1982, Ser. No. 375,884

Int. Cl.³ B66D *1/48*; E05F *15/02*

U.S. Cl. 254—269 **7 Claims**



1. A device for detecting the presence of an obstacle in the path of a descending or ascending load suspended from a pair of cables trained around a pair of spaced pulleys attached to the load and each having a dead end, said device comprising the combination of said cables with a rotatably-supported rod and a pair of radially-projecting and oppositely positioned torque members secured to said rod, each cable having its dead end secured to a respective torque member and exerting oppositely-directed and counterbalancing torque on said rod, whereby a decrease or increase of tension in one cable, due to contact of an obstacle with the descending or ascending load, respectively, will cause rotation of said rod, and further including rod rotation-sensitive means operable to cause stopping of said cables.

4,438,904

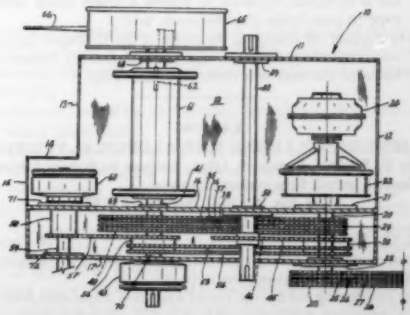
DRAWWORKS

Bobby E. White, P.O. Box 1137, New Iberia, La. 70560

Filed Jan. 7, 1982, Ser. No. 337,748

Int. Cl.³ B66D *1/14, 1/20, 1/26, 5/00*

U.S. Cl. 254—311 **4 Claims**



1. Drawworks apparatus, comprising a drilling platform

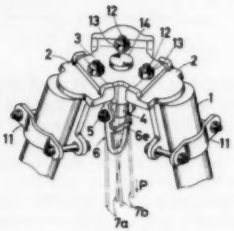
supporting said drawworks apparatus, a cable drum, a drum shaft rotatably supporting said cable drum between two upright support wall members, an input shaft and means for driving said input shaft in rotation, clutch controlled chain sprocket and chain transmission means for causing rotations of said drum shaft and cable drum at any of multiple speeds in response to rotations of said input shaft, control apparatus disposed at the outer side of the one of said support wall members which is disposed toward the drilling platform to be readily accessible to the driller for controlling operation of said drawworks apparatus, said drum shaft having an extension beyond said one support wall member, a single outboard brake fixed to said drum shaft extension at the same side of said apparatus as said control apparatus, said brake controlling rotations of said drum shaft and cable drum, said brake being readily accessible from the drilling platform for inspection, service and repair.

4,438,905

DEVICE FOR MOUNTING AND DISMOUNTING CHAIN BLOCKS

Koji Nishimura, Rittocho, Japan, assignor to Vital Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1981, Ser. No. 327,034
Int. Cl.³ B66D 3/00
U.S. Cl. 254—389 **9 Claims**



1. A device for mounting and dismounting chain blocks comprising:

a support member located at a high place;

a vertical linear suspension member movably connected to and descending downward from said support member;

a horizontal linear pin inserted through the lower portion of said suspension member so that the ends of said pin protrude outward on opposite sides of said suspension member;

a generally upright U-shaped suspension ring with its two arm portions pivotally mounted on the opposite protruding end portions of said horizontal pin so that each said arm portion is displaced from said linear suspension member a sufficient distance to permit a chain block lifting rope to pass freely therebetween; and

a ring guide for changing the angle of the U-shaped suspension ring comprising a bridge bar horizontally connected between the two arm portions of said ring.

4,438,906

FORMERS FOR LINING METALLURGICAL VESSELS

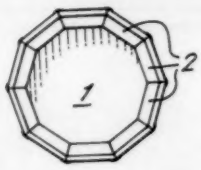
Gary F. English, Conneaut, Ohio, assignor to Foseco International Limited, Birmingham, England

Filed Jun. 20, 1983, Ser. No. 505,818
Int. Cl.³ C21B 7/04
U.S. Cl. 266—44 **16 Claims**

1. A method of lining a metallurgical vessel for containing molten metal, comprising the steps of:

(a) positioning within the vessel a hollow, disposable former comprising a plurality of connected adjoining wall portions of dry wall sheet material so as to leave a space between the former and the vessel corresponding to the lining of the vessel to be formed;

(b) filling the space with hardenable refractory lining material;



(c) while practicing step (b) filling the interior of the former with particulate material;

(d) hardening the lining material; and

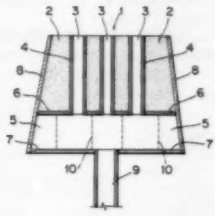
(e) drying and firing the lining to produce a metallurgical vessel lined with refractory lining material.

4,438,907

GAS BLOWING NOZZLE, AND PRODUCTION AND USAGE THEREOF

Narito Kimura, Yokohama; Kiyomi Taguchi, Fukuyama; Masayuki Hammyo, Fukuyama; Osamu Terada, Fukuyama; Teruyuki Hasegawa, Fukuyama; Youichi Nimura, Fukuyama, and Noriyuki Hiraga, Fukuyama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1982, Ser. No. 384,346
Claims priority, application Japan, Jun. 3, 1981, 56-84321; Aug. 27, 1981, 56-125950[U]; Aug. 27, 1981, 56-133287
Int. Cl.³ C21B 7/16
U.S. Cl. 266—217 **4 Claims**



1. A nozzle for refining molten metal, comprising a non-porous refractory structure positionable at a bottom or a wall of a converter; a plurality of passageways for transmitting gas formed in said refractory structure, said passageways being of metal pipes; an upper metal plate and a lower metal plate defining therebetween a gas storage area communicating with said passageways at the bottom of said refractory structure, said upper plate having a plurality of holes corresponding to said passageways; a metal cover encircling said refractory structure and said storage area; and lead pipe connectable to said lower metal plate, said metal pipes being connected to said holes in said upper metal plate; wherein said passageways have a a diameter of from 0.1 to 5 mm, and have a space therebetween of from 3 mm to 150 mm; wherein said plurality of passageways have walls of metal with thicknesses of from 0.1 to 10 mm; wherein said metal cover has a thickness of from 0.1 to 5 mm; wherein said gas storage area has a space between said upper metal plate and said lower metal plate of from 2 mm to 50 mm distance; and wherein said said plurality of passageways comprises a plurality of outside passageways and a plurality of inside passageways, said outside passageways being disposed on the outside of said inside passageways, said outside

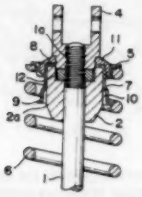
passageways having a diameter smaller than the diameter of said inside passageways.

4,438,908

SPRING RECEIVING STRUCTURE FOR HYDRAULIC SHOCK ABSORBER

Makato Terada, Fukuroi, Japan, assignor to Showa Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 222,718, Jan. 5, 1981, abandoned. This application Jul. 27, 1982, Ser. No. 402,246
Claims priority, application Japan, Jun. 26, 1980, 55-88835[U]
Int. Cl.³ B60G *13/00*
U.S. Cl. 267—8 R **6 Claims**



1. In a hydraulic shock absorber of the type in which a piston is fitted in a main cylinder filled with working fluid to thereby provide a shock absorbing force generating mechanism, a piston rod carried by said piston and extending out of and beyond said main cylinder, a spring receiving and protective structure comprising:

a shock absorbing protective rubber seat fitted onto an end portion of said piston rod remote from said main cylinder for protectively engaging said main cylinder to limit the stroke of said piston within said main cylinder; a protecting cylinder fitted on the base portion of said rubber seat, the leading end of said protecting cylinder having a larger diameter than the diameter of said cylinder at its central portion to accommodate any expanded portion of said rubber seat upon deformation of said rubber seat; a spring receiving collar fitted onto the outer side of said protecting cylinder; said piston rod end portion being terminally threaded; and a mounting fixture screwed onto said end of said piston rod; and a coil spring interposed axially under compression between said spring receiving collar and said main cylinder and forcing said spring receiving collar into contact with said mounting fixture.

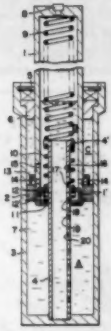
4,438,909

VEHICLE FRONT FORK

Fumio Matsumoto, Shizuoka, Japan, assignor to Showa Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 296,646
Claims priority, application Japan, Sep. 16, 1980, 55-127315
Int. Cl.³ F16F *9/06*
U.S. Cl. 267—64.26 **4 Claims**

1. A front fork for a vehicle comprising a bottom casing filled with working oil and slidably receiving a fork tube having upper and lower ends and carrying a piston at its lower end, a seat tube having upper and lower ends and having the lower end fixed to the bottom portion of the bottom casing and extending into the fork tube, spring means mounted under compression extending between the upper ends of said fork tube and said seat tube and a balance spring mounted under compression between the upper end of the seat tube and the lower end of the fork tube so that the fork tube is stabilised at a position where the difference in the compression between the two springs is balanced with a load, a first check valve carried by the lower end of the fork tube and operating so as to be closed upon contraction of the fork and opened upon extension of the fork, a second check valve overlying the piston and operating so as to be opened upon contraction of the fork and closed upon extension of the fork, the fork tube having an orifice for providing communication between the inside and



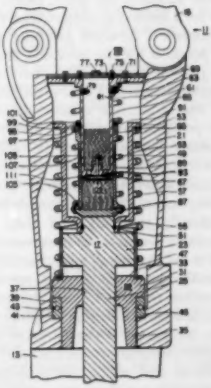
outside thereof and an axially extending row of orifices formed in the seat tube.

4,438,910

SHOCK ABSORBING SNUBBER FOR DERRICK HOOKS

Edward J. McFadden, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 184,607, Sep. 5, 1980, abandoned. This application Aug. 5, 1982, Ser. No. 405,230
Int. Cl.³ F16F *9/19*
U.S. Cl. 267—126 **2 Claims**



1. A shock absorbing snubber for a derrick hook of the type having a housing, a shank axially movable in the housing, and a load bearing hook connected to the lower end of the shank, comprising:

a plunger carried by the housing, having a hollow interior and a lower end;

a sliding barrel having a closed bottom adapted to be contacted by the upper end of the shank, and an open top telescopingly receiving the lower end of the plunger;

the barrel and plunger containing hydraulic fluid with a volume less than the volume of the interiors of the barrel and the plunger when the shank has pushed the barrel to an uppermost position;

check valve means mounted in the interior of the plunger for restricting fluid flow rate from the barrel to the plunger upon movement of the barrel upward relative to the

plunger, and for allowing an increased rate of fluid flow from the plunger to the barrel upon movement of the barrel downward relative to the plunger; and

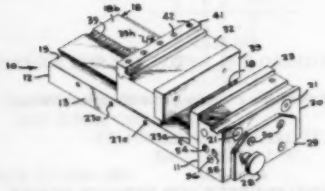
air passage means in the top of the plunger communicating with the atmosphere for allowing air to pass in and out of the plunger above the hydraulic fluid in response to hydraulic fluid volume changes to maintain the pressure in the plunger substantially at ambient.

4,438,911

QUICK SET HYDRAULIC VISE STRUCTURE

Thomas F. McDougal, 1415 Beech La., Fairmont, W. Va. 26554

Filed Jul. 12, 1982, Ser. No. 397,520
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 **14 Claims**



1. A quick set hydraulic work holding vise comprising an elongated stationary base plate member having a fore-and-aft longitudinal axis, a front stationary jaw fixed to said base plate member at a front end thereof and a rear jaw movable toward and away from said stationary jaw along said longitudinal axis, an elongated slide plate member of narrower width than said base plate member overlying and extending centrally along substantially the length of the latter, means supporting the slide plate member for a limited predetermined range of longitudinal movement between a forward gripping position and a rearward release position for the movable jaw, means interfitting said movable jaw on the slide plate member for sliding movement of the movable jaw to a coarse adjustment position along the length of the slide plate member disposing the jaws at a work release position whereby a workpiece portion to be received between the jaws may be withdrawn therefrom, quick acting worm thread means for fine adjustment of the rear jaw to approach workpiece gripping position including an upwardly facing screw threaded trough-like channel substantially longitudinally spanning said slide plate member and rotatably adjustable worm tooth means carried by the movable jaw to interfit in the threads of said channel, means for rotating said worm tooth means between a release position and an interfitting position relative to said channel, hydraulic power means connected to said slide plate member for rapidly moving the slide plate member and the movable jaw thereon to said gripping position responsive to application of fluid pressure to the power means, and means for returning said slide plate member and movable jaw thereon to said release position upon removal of forwardly moving fluid pressure force from said hydraulic power means.

4,438,912

SWIVELLING DEVICE FOR SUPPORTING A LARGE-SIZE PART IN THE FORM OF A SPHERICAL DOME

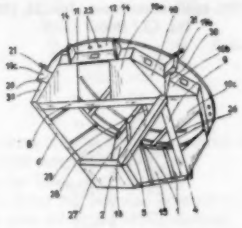
Georges Gillot, Le Creusot, France, assignor to Framatome, Courbevoie, France

Filed Nov. 20, 1981, Ser. No. 323,637
Claims priority, application France, Dec. 8, 1980, 80 25976
Int. Cl.³ B23Q *1/06*
U.S. Cl. 269—55 **5 Claims**

1. A swivelling device for supporting a large-size object (18) in the form of a spherical dome upon which operations are carried out, comprising:

(a) a supporting structure (1) in the form of a truncated pyramid having polygonal large and small bases and consisting of metal sections (4, 5, 6, 7, 8, 9) welded along the direction of the edges of said pyramid, said structure having a plurality of bearing surfaces one of which constitutes the small base of said pyramid and the others its side faces;

(b) a crown (12) for support and attachment of said dome (18) including means (19, 25) for centering and attachment of said dome (18) onto said crown (12); and



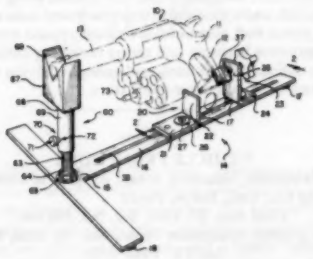
(c) a connecting structure (10, 11) for assuring a rigid union between the large base of said pyramid (1) and said crown (12) so that the central axis of said pyramid (1) coincides with the central axis of said crown (12), said large base located adjacent said crown (12), said dome (18) being placed on said crown (12) with its axis directed towards said supporting structure (1), whereby it may be swivelled in different directions by letting said supporting device rest upon a horizontal surface by way of its various bearing surfaces.

4,438,913

PISTOL MAINTENANCE DEVICE

Gary F. Hylla, 1709 Spruce St., Peru, Ill. 61354

Filed Sep. 24, 1982, Ser. No. 423,296
Int. Cl.³ B23Q *3/18*
U.S. Cl. 269—60 **12 Claims**



1. A handgun holding device for maintaining a handgun having a handgrip and barrel in position by the handgrip and barrel during maintenance, comprising:

a baseplate having a longitudinal slot, said handgrip positionable thereon at a cleaning position adjacent to said longitudinal slot with said barrel extending in substantial alignment with said longitudinal slot;

a pair of angle brackets mounted upon said baseplate at the cleaning position including first and second angle brackets rigidly mounted to said baseplate through said longitudinal slot, said first angle bracket abutting one side of the handgrip;

an adjustable holding means engaging said second angle bracket and adjustably extendible therefrom to rigidly engage the other side of the handgrip opposite to said one side, thereby rigidly maintaining the handgrip in position

between said adjustable holding means and said first angle bracket;

a barrel support member having one end mounted on said baseplate in substantial alignment with said longitudinal slot and the other end supportably engaging said barrel while allowing ready access to all desired cleaning or repair regions of the handgun;

wherein said barrel support member comprises a support member with one end engaging said baseplate and a top end extending upwardly from the baseplate, said top end including a pillow block having surfaces contoured to supportably nest said barrel therewithin.

4,438,914

CLOTH LAYING MACHINE

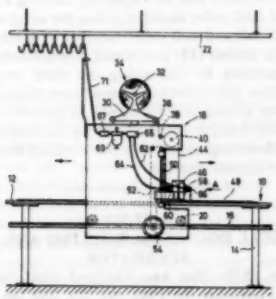
Rolf Stengle, and Rolf Grupp, both of Stuttgart, Fed. Rep. of Germany, assignors to Krauss u. Reichert GmbH & Co. and KG Spezialmaschinenfabrik, both of Feilbach, Fed. Rep. of Germany

Continuation of Ser. No. 70,712, Aug. 29, 1979, abandoned. This application Jul. 30, 1981, Ser. No. 288,357

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838410

Int. Cl.³ B65H *29/46*

U.S. Cl. 270—31 **17 Claims**



1. A cloth laying machine for laying out on a supporting surface superimposed layers of cloth drawn off from a web of cloth supply having two longitudinal edges and a longitudinally extending center area therebetween, said cloth laying machine comprising a cloth laying carriage for drawing off a web of cloth from said supply and for guiding said web, means for reciprocating said carriage above the supporting surface in two directions of travel for deposition of at least one respective layer of cloth by said cloth laying carriage at least when said cloth laying carriage moves in one of the two directions of travel, said supporting surface being substantially horizontal, a blower means located above the topmost layer of cloth, said blower means being supplied with a positive air pressure for generating an air current flowing from above and directed downwardly towards a substantially horizontal layer of cloth that has been laid out, said blower means being disposed so that the air current has flow components directed outwardly from said center area to either edge of said layer of cloth.

4,438,915

SHEET FEEDING DEVICE

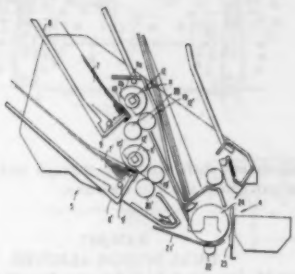
Yoshiyuki Akamatsu, and Jun Shimogawara, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 155,821, Jun. 2, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,289

Claims priority, application Japan, Jun. 1, 1979, 54-69087

Int. Cl.³ B65H *3/06*

U.S. Cl. 271—9 **7 Claims**



1. A sheet feeding device, comprising:

a sheet stack housing for housing stacked sheets, said sheet stack housing having a pair of separator pawls and means for pressing said stacked sheets against said separator pawls;

kick-out roller means provided above said sheet stack housing for kicking out and feeding an uppermost sheet from said stacked sheets, said kick-out roller means having a circular segment cross section and a chordal flat;

means for rotating said kick-out roller in a transporting direction from said sheet stack housing;

clutch means for selectively transmitting a one-way rotational force to said kick-out roller means;

bi-directionally rotatable feed rollers located proximate to said kick-out roller means for further feeding said sheet kicked out and fed from said sheet stack housing and for return feeding said sheet to said sheet stack housing; and

drive means for driving said feed rollers in one direction to deliver a sheet from said sheet stack housing, and in the reverse direction to deliver said sheet back to said sheet stack housing.

4,438,916

PAPER FEEDER

Shoichi Kawaguchi, Toride, Japan, assignor to Komori Printing Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 354,102

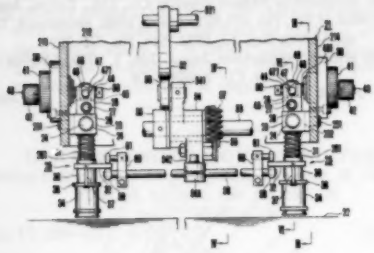
Claims priority, application Japan, Mar. 4, 1981, 56/30781; Mar. 4, 1981, 56/30783

Int. Cl.³ B65H *3/08*

U.S. Cl. 271—93 **6 Claims**

1. A paper feeder comprising a frame, a separation suction device mounted on said frame and substantially vertically movable for picking up stacked sheets one at a time, said separation device having a guide nozzle, a transport suction device mounted on said frame and substantially horizontally movable for transferring the picked-up sheet from said separation suction device, and an adjustment device for adjusting said separation suction device tiltably back and forth and laterally, said adjustment device including a nozzle support pivotably mounted on said frame for angular movement about a first axis, a pin having a second axis transverse to said first axis and by which said guide nozzle is pivotably supported on said nozzle support, a nut pivotably mounted on said guide nozzle at an upper end thereof, an adjustment shaft having a threaded portion held in threaded engagement with said nut, and an

adjustment knob having an axial bore off center with respect to said adjustment knob and rotatably mounted on said frame,



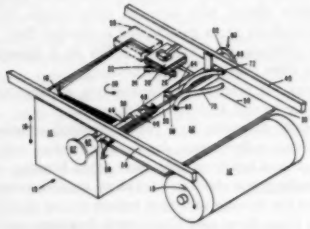
said adjustment shaft extending through said axial bore for angular movement about its own axis.

4,438,917

DUAL MOTOR ALIGNER

Donovan M. Janssen; John P. Mantey; Donald C. Roller, all of Boulder, and Lance A. Walker, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1981, Ser. No. 311,837
Int. Cl.³ B65H *9/20*
U.S. Cl. 271—227 **7 Claims**



1. A sheet handling device for adjusting sheet position prior to entering said sheet into the sheet processing station of a utilization apparatus, said device capable of adjusting said sheet position (1) for skew misalignment, (2) for lateral (side) edge misalignment, and (3) for adjusting sheet speed to that desired for entry into the processing station and for timing the entry of the leading edge of the sheet into the processing station at a desired time, comprising:

a sheet entry station;

a sheet transport path coupling said sheet processing station with said entry station;

independently controlled drive means disposed within said transport path, a first one of such drive means located adjacent a first edge of said transport path and a second one of such drive means located adjacent the opposite edge of said transport path, said drive means for moving said sheet along said transport path to said sheet processing station from said entry station;

signal generating means disposed within said transport path for sensing sheet position; and

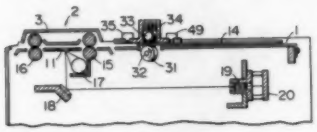
control means responsive to said signal generating means for adjusting the speed of said independently controlled drive means to correct sensed positional misalignment of said sheet for skew misalignment, lateral edge misalignment and for timing the entry of the leading edge of said sheet into said sheet processing station at a desired speed.

4,438,918

ORIGINAL ALIGNING DEVICE

Yoshio Ito, Kanagawa; Takeshi Ikeda, Yokohama; Hiroaki Matsumoto, Kawasaki, and Minoru Ogata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 220,045, Dec. 5, 1980, abandoned. This application Feb. 28, 1983, Ser. No. 468,809
Claims priority, application Japan, Apr. 20, 1979, 51-48655; Jun. 12, 1979, 51-73694; Oct. 8, 1979, 51-129781; Oct. 23, 1979, 51-136727; Oct. 24, 1979, 51-137231
Int. Cl.³ B65H *9/16*
U.S. Cl. 271—251 **10 Claims**



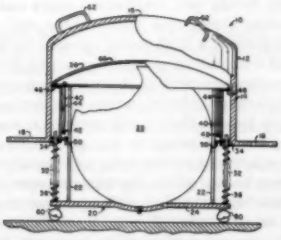
5. An original aligning device for automatically aligning sheet-like originals of various thickness in a predetermined direction so that, when an original is conveyed to a reading portion for reading image information of the original, the original is fed in the predetermined direction with respect to said reading portion, characterized by a single ball (**8, 23, 33, 44, 51, 71, 75**) having no particular rotation axis and which, when it receives an external drive force, rotates in accordance with said drive force, a roller member (**22, 29, 50, 70, 76**) for holding a sheet original (**14, 25, 81**) between it and said ball, an original guide surface (**5**) provided in a direction at right angles with respect to said reading portion (**11**), means (**7, 10, 13, 24, 32, 60**) for driving one of said ball and said roller member in a direction such that the original conveyed by the cooperation of said ball and said roller member bears against said guide surface, magnetic means (**34, 38, 41, 46**) for forming a gap between said ball and said roller member when the original is inserted between said ball and said roller member by a magnetic force, and conveyor means (**15**) positioned downstream of said ball and roller member for conveying the sheet original to said reading portion, said conveyor means being stopped during the initial feeding of the sheet original to prevent conveyance thereof to said reading portion, thereby facilitating the alignment of the sheet original in the predetermined direction by the driving force applied thereto.

4,438,919

MECHANICAL BOUNCING, ROLLING AND SKATING APPARATUS

Israel Gamzo, 2570 - 35th Ave., Oakland, Calif. 94601

Filed Mar. 19, 1982, Ser. No. 359,786
Int. Cl.³ A63B *25/00*
U.S. Cl. 272—1 B **7 Claims**



1. A recreational apparatus comprising

means defining an upper housing having generally cylindrical side walls and a top cover,

a support platform attached to said upper housing disposed about the outer periphery of said generally cylindrical side wall proximate the bottom edge thereof,

a bottom support member comprising

a base support,

a plurality of first guide members attached to said base support and extending upwardly therefrom, said guide members adapted to telescopically receive said upper housing,

means defining a base support cover attached to said plurality of first guide members proximate the top ends thereof, and adapted to be enclosed within said cylindrical side walls of said upper housing, said base support cover comprising

means for controlling the flow of air into and out of the space between said top cover of said upper housing and said base support cover, and

means for resiliently biasing said upper housing away from said bottom support member.

4,438,920

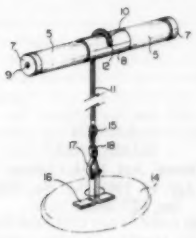
EXERCISE DEVICE

Pierre Veillette, 6 Pl. Radisson, Apt. 610, Hull, Quebec J8Z 1T7, Canada

Filed Aug. 11, 1982, Ser. No. 407,063

Int. Cl.³ A01B *23/00*

U.S. Cl. 272—67 **5 Claims**



1. An exercise device comprising an elongated, substantially cylindrical body; first and second sleeve means rotatably mounted on the ends of said body for manual gripping by a user, said first and second sleeve means being resilient, whereby the sleve means can be squeezed against said body to prevent rotation; cord means fixedly connected at one end to said body between said first and second sleeve means; and connector means for connecting the other end of said cord means to a weight whereby, by squeezing one sleeve, releasing the other sleeve and rotating the squeezed sleeve and body, the cord is wound around the body and the weight is raised.

4,438,921

CALIBRATION OF LOAD INDICATOR FOR ERGOMETRIC EXERCISER

Eugene J. Szymski, Skokie, Ill., assignor to Schwinn Bicycle Company, Chicago, Ill.

Filed Jun. 8, 1981, Ser. No. 271,675

Int. Cl.³ A63B *21/00*; G01L *5/28*

U.S. Cl. 272—73 **2 Claims**

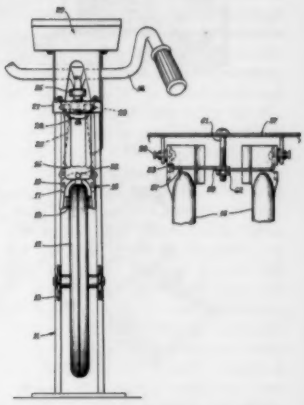
1. The method of calibration for effecting precise adjustment of a load indicator in an ergometric exerciser having support means for said load indicator, a pedal-actuated wheel freely rotatably mounted on said support means, brake means mounted on a frame resiliently biased on said support means for variable frictional engagement with said wheel for movement on said frame by forward rotation of the wheel to actuate said load indicator, including adjustable resistance control means for frictionally engaging said brake means with said wheel, and adjustable calibration means interposed between said frame and said support means; comprising the following steps:

(1) suspending a weight by a cord from the forwardly disposed periphery of said wheel;

(2) raising said weight until the same hangs freely by manually rotating said wheel backwards;

(3) adjusting said resistance control means to just prevent said weight from turning said wheel;

(4) manually rotating said wheel slightly forward, allowing slight slippage past said brake means;



(5) rapping the side of said wheel briskly several times just behind said brake means, as with the handle of a screwdriver, and noting the reading of said load indicator;

(6) slightly rotating said wheel backwards, without slippage of said brake means, and repeating step 5; and

(7) adjusting said calibration means against the resilient biasing of the frame to compensate for the average readings obtained in steps 5 and 6 to effect a precise initial setting of said indicator.

4,438,922

TOY FOR STEERING A SIMULATED CAR

Kataro Suda, Tokyo, Japan, assignor to Suda Kinzoku Seisakusho Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,445

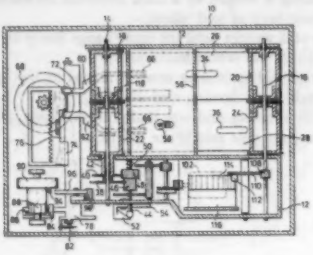
Claims priority, application Japan, Feb. 20, 1981, 56/22884[U]

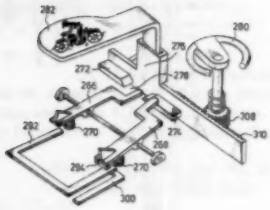
Int. Cl.³ A63F *9/14*

U.S. Cl. 273—1 GA **2 Claims**

1. A toy for steering a simulated car, which comprises two shafts arranged parallel in a housing; two drums mounted separately on each of said shafts, one of said drums being rotatable in relation to the other drum on the same shaft; two light transmissive endless belts disposed side by side, one said belt being trained over one drum on each shaft and each said belt having a number of cars pictured thereon, said endless belts being provided with the same number of cutouts as the number of said pictured cars; gears having different numbers of teeth for drivingly rotating one of the drums engaged with one of said belts and one of the drums engaged with the other belt; drive means for driving said gears and for selectively interrupting the drive to one of said gears; a light source arranged between the drums; an elastic body for pressing one end of each of a pair of driven elements against cutouts of the two belts, each of said driven elements being provided adjacent to its other end with a support portion capable of moving together with a simulated car operated by a handle, said support portion allowing one or the other of said one ends of said

driven elements to be supported thereon depending on its position; and a switch under the other end of each said driven





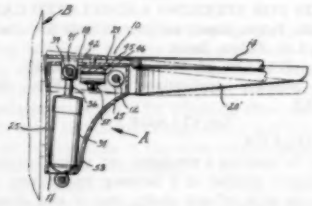
element and switched on by pressure of said driven element for causing an electric current flow to said light source.

4,438,923

SHOCK-ABSORBING BASKETBALL GOAL UNIT

Charles J. Engle, St. Louis County, and Robert A. Boitano, St. Louis, both of Mo., assignors to Gared Corporation, St. Louis, Mo.

Filed Apr. 26, 1982, Ser. No. 371,960
Int. Cl.³ A63B *63/08*
U.S. Cl. 273—1.5 R **8 Claims**



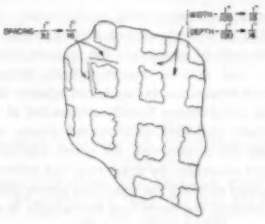
1. A basketball goal unit for use with a basketball backboard having a front surface and comprising a rigid backboard mounting frame adapted to be securely mounted on the front surface of said backboard, including a first portion configured for lying against said backboard and for being secured thereto, and a second portion extending outwardly from said first portion, and, thereby, outwardly from the front surface of said backboard, a goal mounting frame configured for cooperative interengagement with said backboard mounting frame, said goal mounting frame being configured for overlying the second portion of said backboard mounting frame, a goal carried by said goal mounting frame, a pivot shaft for pivotally interconnecting said goal mounting frame with said backboard mounting frame to permit pivotal rocking movement of said goal and goal mounting frame about a transverse pivot axis, said pivot shaft connecting said goal mounting frame to said second portion of said backboard mounting frame, said goal mounting frame having a pivot shaft-remote portion extending from said pivot shaft toward said backboard, first coupling means for providing resilient coupling between said goal mounting and backboard mounting frames to permit resilient pivotal rocking movement of said goal about said pivot axis, and second coupling means for providing shock absorbing coupling between said goal mounting and backboard mounting frames during said pivotal rocking movement of said goal about said pivot axis, said first coupling means interconnecting said second portion of said backboard mounting frame and said pivot shaft-remote portion of said goal mounting frame, said second coupling means interconnecting said first portion of said backboard mounting frame and said pivot shaft-remote portion of said goal mounting frame, said pivot shaft-remote portion of said goal mounting frame and said second portion of said backboard mounting frame each being of channel section and of inverted-U configuration and each thereby having side flanges, said pivot shaft extending through said side flanges, said goal mounting frame thereby being pivotally secured to permit rocking movement of said goal about said pivot axis relative to said backboard upon said goal being displaced downwardly by external application of force, said first coupling means comprising a spring interengaging said second portion of said backboard mounting frame and said pivot shaft-remote portion of said goal mounting frame.

4,438,924

GAME BALL

Ian Carr, 740 S. Federal, Apt. 1104, Chicago, Ill. 60605

Filed Apr. 13, 1981, Ser. No. 253,110
Int. Cl.³ A63B *39/00*
U.S. Cl. 273—58 B **32 Claims**



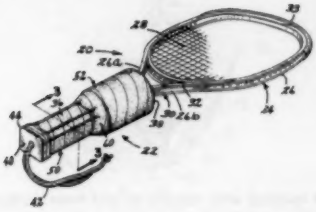
1. A spheroidal projectile for launching into ballistic flight, said projectile having a continuous outer surface for preventing fluid from entering within said projectile, a dense concentration of aerodynamic roughening elements per unit of surface area which protrude through the laminar sublayer of the fluid boundary layer flowing past the projectile in flight, said aerodynamic roughening being adapted to cause said projectile, when spinning at rotational speeds attainable by hand launch, to experience asymmetric lateral drag forces which drive said projectile through a flight trajectory having a first curved flight direction followed by a second curved flight direction having a curve component opposite to said first curved flight direction, where the curved flight directions are related to the density of the aerodynamic roughening elements, said projectile further including a mass of magnitude such that said curved flight directions caused by said aerodynamic roughening are accentuated at translational velocities below about 100 feet per second, such as attainable by hand launch.

4,438,925

HANDLE FOR RACQUETBALL RACQUET

James A. Lindstrom, 1595 Trollhagen Dr., Fridley, Minn. 55421

Filed Feb. 9, 1982, Ser. No. 347,102
Int. Cl.³ A63B 49/08
U.S. Cl. 273—75 10 Claims



1. A handle for a racquetball racquet, comprising:

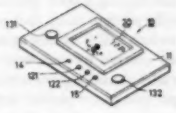
an elongatad member having a longitudinal axis and including front, intermediate, and rear portions, said front portion having a larger cross sectional configuration in at least two orthogonal directions than said rear portion, said intermediate portion extending from said front portion to said rear portion, said rear portion having a length which is less than said intermediate and front portions combined; said handle providing for a modified grip wherein said front portion or a portion thereof makes contact with the front two fingers of a player's hand and said rear portion or a portion thereof makes contact with the back two fingers of a player's hand, such that said front two fingers cannot extend as far about the periphery of said handle as said back fingers, and are necessarily positioned farther away from said longitudinal axis than said back fingers thereby allowing said back fingers to grip the handle more tightly than said front fingers.

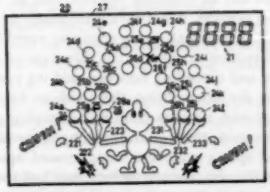
4,438,926

TIMEPIECE APPARATUS HAVING A GAME FUNCTION

Gunpei Yokoi, Kyoto, and Satoru Okada, Osaka, both of Japan, assignors to Nintendo Co., Ltd., Kyoto, Japan

Filed Jun. 20, 1980, Ser. No. 161,344
Claims priority, application Japan, Feb. 28, 1980, 55-24836; Apr. 4, 1980, 55-44999
Int. Cl.³ A63F 9/00
U.S. Cl. 273—85 G 48 Claims





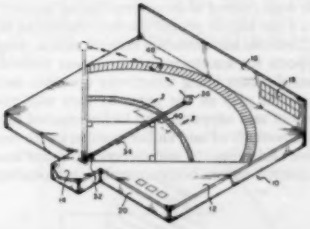
1. A timepiece apparatus having a game function, comprising: game associated information generating means for generating game associated information including at least a symbol indicating information for use in a game and including game operation means operable by a player for performing said game, current time information generating means for generating a current time information, said time information generating means including horological means for performing a horological function for said generating of a current time information, display means including game information displaying means for displaying said game associated information from said game associated information generating means, apparatus controlled symbol means adapted for being displayed by said display means for displaying at least a symbol having a movable or changeable configuration, and numerical value information displaying means for displaying said current time information from said current time information generating means in the form of at least a numerical value, mode selecting means for selecting for said display means a game displaying mode for displaying said game associated information or a current time displaying mode for displaying said current time information, and display control means responsive to the selection of said game displaying mode by said mode selecting means for displaying said game associated information, said display control means being further responsive to the selection of said current time displaying mode by said mode selecting means for displaying said current time information from said current time information generating means by said numerical value information displaying means, current time correcting means operatively connected to said horological means and responsive to said game operating means for correcting said current time information by using said game operation means when said current time displaying mode is selected by said mode selecting means, said apparatus further comprising player controlled symbol means adapted to be displayed on said display means for interacting with said apparatus controlled symbol means in response to an operation of said game operation means, means for imparting to said apparatus controlled symbol means different relative movements in a plurality of paths, and means for causing at least one of said apparatus controlled symbol means to assume a substantially unknown different relative movement to another of said apparatus controlled symbol means in said paths in response to a predetermined positional relationship between said one of said apparatus controlled symbol means and said player controlled symbol means.

4,438,927

BASEBALL GAME

Rudolph R. Hefler, 17 E. Main St., Moorestown, N.J. 08057

Filed Sep. 30, 1982, Ser. No. 431,583
Int. Cl.³ A63B 69/00
U.S. Cl. 273—90 5 Claims



1. A baseball game comprising:

a substantially horizontally disposed platform having a simulated baseball field on the upper surface thereof with home plate adjacent one side edge of the platform;

an elongated rod having a ball at the upper end thereof, the lower end of said rod being spring mounted to said platform adjacent home plate so that it can be moved between its normally upright position and a plurality of horizontal positions;

means for temporarily holding said rod in one of said horizontal positions;

means remotely located from said holding means for deactivating said holding means to thereby allow said rod to swing to its upright position under the force of said spring;

a baseball bat for batting said ball thereby moving said ball and said rod to one of said plurality of horizontal positions;

a plurality of sensing means, a different one of said sensing means being located at each of said plurality of positions, and

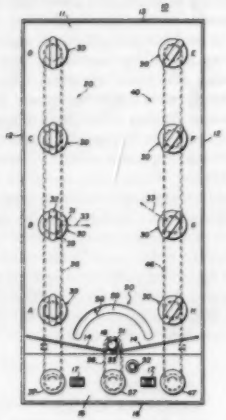
indicating means for visually indicating the position to which said ball and rod have been batted.

4,438,928

PINBALL GAME WITH GANGED KICKER MECHANISMS

Max Wiczer, Skokie, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Aug. 19, 1982, Ser. No. 409,412
Int. Cl.³ A63D *13/00*
U.S. Cl. 273—121 R **23 Claims**



1. In a pinball game in which a ball rolls along an inclined playfield board, the improvement comprising a plurality of kicker mechanisms carried by the playfield board, each of said kicker mechanisms including a movable support and a kicker member carried by said support, each kicker member being movable with respect to its corresponding support for engagement with the ball to propel the ball therefrom in a predetermined direction, and direction control means coupled to all of said supports for simultaneous movement thereof, said direction control means being selectively operable during the normal course of play of the game to vary said predetermined directions of said supports, and kicker control means for controlling movement of said kicker members with respect to their respective said supports, said direction control means and said kicker control means being operable independently of each other.

4,438,929

DROP TARGET WITH CAM MEANS

Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Aug. 3, 1981, Ser. No. 289,371
Int. Cl.³ A63D *13/00*
U.S. Cl. 273—127 R **5 Claims**

4. A drop target for a pinball game comprising an elongated target body having front and rear surfaces, a rectangular notch formed in said front surface closely adjacent to one end thereof and extending laterally thereacross, said notch having an inner surface disposed substantially parallel to the direction of elongation of said target body, and a cam surface extending outwardly from said rear surface adjacent to said one end of said

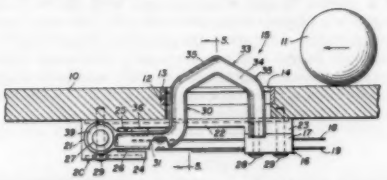
body and inclined with respect to said inner surface of said notch, said cam surface being intersected by a plane disposed normal to the direction of elongation of said target body and intersecting said notch.

4,438,930

ROLLOVER SWITCH APPARATUS

Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Aug. 28, 1981, Ser. No. 297,117
Int. Cl.³ A63D *13/00*
U.S. Cl. 273—127 R **8 Claims**

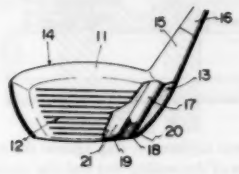


1. Rollover switch apparatus for use in a pinball game including a playfield board upon which a pinball rolls and which has at least one opening therein, said rollover switch apparatus comprising a switch having two leaf-spring members, one said leaf-spring member being movable toward and away from the other said leaf-spring member, said an elongated one-piece plastic base for attachment to the underside of the playfield board, said base having a body portion and a leg portion carried by said body portion and a foot portion carried by said leg portion, said switch being fixedly attached to said foot portion, a stop member carried by said body portion and projecting therefrom parallel to said leg portion and spaced therefrom, an elongated rigid one-piece plastic actuator channel-shaped in transverse cross section along the entire length thereof and pivotally attached to said body portion for movement between a rest position and an actuating position, said actuator having a ball-engaging portion, a leaf-spring engaging member carried by said actuator, said leaf-spring engaging member being elongated in a direction normal to the direction of elongation of said actuator and extending between said leg portion and said stop member for cooperation therewith to limit the pivotal movement of said actuator, said ball-engaging portion being adapted to protrude through the opening in the playfield board and said leaf spring members being spaced apart when said actuator is in the rest position thereof, said leaf-spring engaging member engaging said one leaf-spring member and holding it in engagement with said other leaf-spring member when said actuator is in the actuating position thereof, said actuator being adapted to respond to engagement of said ball-engaging portion by a pinball for moving from the rest position to the actuating position.

4,438,931
GOLF CLUB HEAD

Tetsuo Motomiya, Tsubame, Japan, assignor to Kabushiki Kaisha Endo Seisakusho, Tsubame, Japan

Filed Sep. 16, 1982, Ser. No. 418,636
Int. Cl.³ A63B 53/04
U.S. Cl. 273—167 H 10 Claims

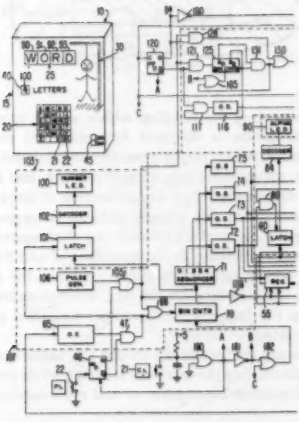


1. A golf club head comprising
two or more sheet-like shell sections secured together edgewise to form a one-piece sealed hollow shell structure having a shaft mounting section and a bottom section, and
a shaft, the lower end of which is fastened both to said shaft mounting section and to said bottom section.

4,438,932
APPARATUS FOR ELECTRONIC WORD GAME

Herbert Finkel, 714 Jackpine Ct., Sunnyvale, Calif. 94086

Filed Oct. 16, 1978, Ser. No. 951,477
Int. Cl.³ A63F 3/06
U.S. Cl. 273—237 15 Claims

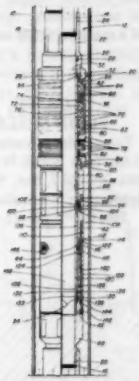


1. An electronic word game comprising:
(a) a comparator circuit;
(b) a first circuit for applying sequentially to said comparator circuit a first set of signals representing letters of a selected word;
(c) a second circuit for applying successively to said comparator circuit a second set of signals representing letters selected to match the letters represented by said first set of signals;
(d) said comparator circuit producing a first output voltage for each signal of said second set matching a signal of said first set and producing a second output voltage for each signal of said second set failing to match a signal of said first set;
(e) a word display circuit responsive to said first output voltage to display a letter for each matched letter; and
(f) an object illuminating circuit responsive to said second output voltage to display segmentally an object for each failure to match a signal of said second set with a signal of said first set.

4,438,933
HYDRAULIC SET HIGH TEMPERATURE ISOLATION PACKER

John C. Zimmerman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 6, 1982, Ser. No. 375,418
Int. Cl.³ E21B 43/04
U.S. Cl. 277—9.5 18 Claims

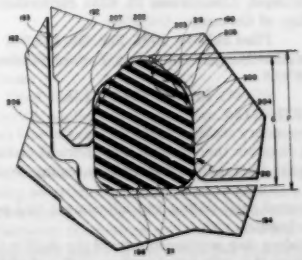


1. A packer, comprising: mandrel means;
a compressible packer element on said mandrel means;
fluid pressure actuated piston means adapted to compress said packer element; and
mechanical packer element compression maintenance means, including:
ratchet means associated with said piston means; and
spring means adapted to exert an axial force on said packer element and said ratchet means.

4,438,934
SEAL FOR ROTARY CONE ROCK BIT

Claude R. Garner, Odessa, Tex., and William J. Neilson, Murrieta, Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 378,454, May 14, 1982. This application Nov. 3, 1982, Ser. No. 438,671
Int. Cl.³ F16C 33/78; F16J 9/00; E21B 10/08
U.S. Cl. 277—92 19 Claims



1. A shaft seal for rotary motion between a shaft and a housing containing said shaft to isolate a lubricated bearing from an external environment comprising a resilient annular

seal having a greater radial length than longitudinal length in cross section, said radial length is from about 1.1 to about 1.4 times said longitudinal length, said radially disposed annular seal being confined within an annular chamber, said chamber being formed between a bearing journal and a rotating part mounted thereon, by the cooperation of radially extending surfaces and two concentric longitudinally extending surfaces formed between said journal and said rotating part and characterized by at least one of said longitudinally extending surfaces being shaped so that the radial dimension of the annular chamber changes gradually from a minimum adjacent the radially extending surfaces to a maximum at a central region between the radially disposed surfaces, so that differential pressure across said radially disposed annular seal moves said seal axially away from said central region thereby increasing the squeeze on said seal and resisting egress of lubricant from a bearing or ingress of a material from said external environment into said bearing.

4,438,935

FLUID SEALS

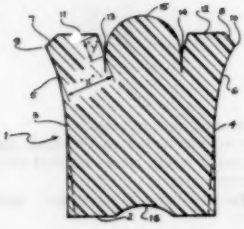
Geoffrey C. Lees, Toongabbie, Australia, assignor to J. C. Ludowici & Son Ltd., New South Wales, Australia

Filed Jul. 20, 1982, Ser. No. 400,112

Claims priority, application Australia, Jul. 29, 1981, PE9968

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—205 **9 Claims**



1. A homogeneous self-energising seal comprising an annular member having side walls, a top and a bottom forming the trunk of the seal, the side walls having top chamfered portions, the upper edges of which merge into flat portions on the top of the seal, the bottom edges of said chamfered portions forming the sealing lips of the seal, the flat portions merging into spaced annular slots or troughs in the top of the seal which are separated by a raised centre portion upstanding from the top of the seal.

4,438,936

SECONDARY SEALING ELEMENT WITH U-SHAPED SEALING RING FOR MECHANICAL SEALS

Rainer Schlegel, Albanstrasse 18, 6234 Hattersheim am Main, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 235,941

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007665

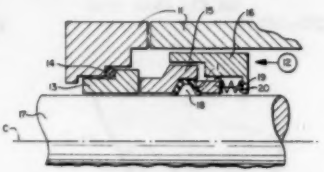
Int. Cl.³ F16J *15/38*

U.S. Cl. 277—212 C **20 Claims**

1. A secondary sealing device for an axial seal ring assembly having a chamber therein with a cylindrical surface wall surrounding the axial shaft, the secondary sealing device comprising:

(a) a biased axial sliding and adjustment ring positioned in the chamber; and

(b) a sealing ring positioned around the shaft in the chamber between the cylindrical surface wall and sliding and adjustment ring, formed of a material with good sliding, low-elasticity, and non-brittle characteristics, having a generally U-shaped cross-section with two arms extending from a plane perpendicular to the axis of rotation of the shaft, and pressed into sealing engagement against the cylindrical surface wall and the shaft by the axial bias of



the sliding and adjustment ring against the side of one of the two arms of the sealing ring and the resulting changes in the diametric dimensions of the sealing ring.

4,438,937

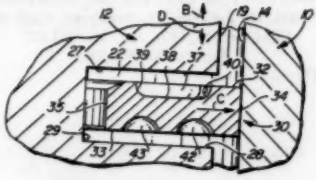
PISTON RING

Maurice J. Moriarty, 3225 W. Sahuaro, Phoenix, Ariz. 85029

Filed Dec. 6, 1982, Ser. No. 447,237

Int. Cl.³ F16J *9/12*

U.S. Cl. 277—215 **11 Claims**



1. In a piston ring for residing within a ring groove of a piston, which piston is disposed for reciprocal movement within a cylinder, which ring is generally annular and includes a top surface, an undersurface, an outersurface, and an innersurface, said surfaces defining a cross-section of fixed exterior dimension, and which ring groove includes an upper surface for receiving the top surface of said ring thereagainst, and a lower surface for receiving the undersurface of said ring thereagainst, and which cylinder includes a surface for sealingly receiving the outer surface of said ring, improvements therein for increasing the responsiveness of said ring, said improvements comprising:

at least one gas loading cavity in said top surface; and

means for decreasing the inertia of said ring while preserving the fixed exterior dimensions of said cross-section.

4,438,938

SEAL FOR INCORPORATION IN HIGH PRESSURE LEAK TESTING TOOL

Richard A. Armell, Montrose, Scotland, assignor to Boc-Nowsco Limited and Drexel Equipment Limited, both of London, England

Filed Feb. 11, 1983, Ser. No. 465,803

Claims priority, application United Kingdom, Feb. 12, 1982, 8204252

Int. Cl.³ F16J *15/20*

U.S. Cl. 277—230 **9 Claims**

1. A high-pressure seal comprising

a hollow cylindrical member of a rubber having a poor memory, and

multiple, pre-rubberized, woven fabric layers arranged as a nested stack and embedded in the rubber of the cylindrical member,

each said layer being shaped to conform both with a peripheral part of one end face of the hollow cylindrical member and with an axially extending part of the outer cylindrical periphery contiguous with said end face so that each layer is continuous at the junction between the portion thereof contiguous with the end face and the portion contiguous

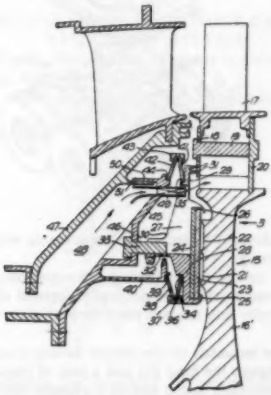
with the cylindrical periphery, the rubber and the rubberized fabric layers being of materials such that they can withstand multiple high compression loading cycles without permanent deformation, substantially without extrusion and with a rapid return to the relaxed condition after each loading cycle.

4,438,939

ANNULAR SEAL FOR A GAS TURBINE ENGINE

George Pask, Stanton-by-Bridge, and Howard J. Golton, Allestree, both of England, assignors to Rolls-Royce Limited, London, England

Filed Apr. 22, 1981, Ser. No. 256,672
Claims priority, application United Kingdom, May 10, 1980, 8015557
Int. Cl.³ F16J 15/08
U.S. Cl. 277—236 5 Claims



1. A gas turbine engine comprising:

a first generally annular component having an axially facing annular surface;

a second generally annular component having an axially facing annular surface coaxial with and opposing said annular surface of said first component;

means permitting relatively large axial movement of said first annular component with respect to said second annular component without permitting relative rotational movement between said first annular component and said second annular component; and

an annular seal for sealing between the annular surface of said first component and the annular surface of said second component while permitting the relatively large axial movement of said first annular component with respect to said second annular component, said annular seal separating a higher pressure area of the engine from a lower pressure area of the engine and comprising a stacked plurality of frusto-conical Belleville washers, adjacent washers being of opposite hand and having opposed abutting preipheries, and an annular ring U-shaped in cross-section for receiving and circumferentially enclosing the opposed abutting peripheries of said washers, said ring permitting said washers to be capable of complete angular displacement of each when there is a change of axial length of the stack of washers without extreme stresses and high functional forces being developed therein at the enclosed abutting peripheries of said washers, said annular ring enclosing the abutting peripheries of the washers extending toward said lower pressure area.

4,438,940

PORTABLE ICE FISHING ENCLOSURE

Frederick J. Hunt, 3224 Garden, Royal Oak, Mich. 48072

Filed Apr. 14, 1982, Ser. No. 368,167
Int. Cl.³ B62B 15/00
U.S. Cl. 280—12 S 15 Claims

1. A transport apparatus for carrying goods in one orientation and providing shelter in another orientation, comprising:

a container body having base and wall portions and being of such size and interior volume as to accommodate at least the trunk portion of a human therein;

ground engaging means for facilitating movement of said body over a ground surface, said ground engaging means being connected to said body for transport operation with said wall portion in a horizontal orientation;

support means connected to the base portion of the body for stably supporting said body in a shelter position wherein the wall portion is vertically oriented and the base portion is spaced above the ground surface to provide comfortable seating for a human,

said ground engaging means being configured to slide said apparatus over snow and ice and functioning with said support means to support the apparatus on end with the wall portion of said apparatus in an upright and vertical position.

4,438,941

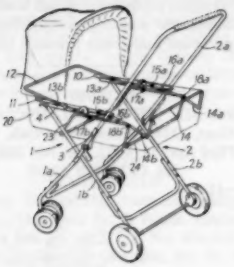
SUPPORT FOR CHILD

Raymond Guillaume, Mougins, France, assignor to Baby Relax, Anglet, France

Filed Jun. 17, 1981, Ser. No. 274,628
Claims priority, application France, Jun. 18, 1980, 80 13481
Int. Cl.³ B62B 7/00
U.S. Cl. 280—47.4 9 Claims

1. A support means transformable into a seat or perambulator, comprising an articulated framework, a bottom supported by the framework and a body element forming at least a partial connection between the bottom and the framework, wherein the framework has a head end and a foot end and includes two first parallel longitudinal elements, two end hoop elements articulated on said first longitudinal elements, and two second parallel longitudinal elements parallel to said first longitudinal

elements and articulated on said hoop elements so that, seen in profile, the hoop element-longitudinal element assembly constitutes a parallelogram deformable from a first position in which the longitudinal elements and hoop elements substantially form a frame contained in a plane to a second position in which said hoop elements form with the longitudinal elements three consecutive planes defining the general appearance of a seat, wherein the end hoop element located at the foot end of the framework includes means for defining a footrest, said footrest means being substantially perpendicular to the plane of



said frame in the first position and being substantially parallel to said longitudinal elements in the second position, wherein the body element forms a substantially parallelepipedic pouch coupled at least to the transverse parts of said hoop elements and to the footrest means, and wherein the bottom includes two parts articulated transversely to each other, the bottom part nearer said footrest means being free with respect to the body element and supported by a first stirrup-shaped crosspiece coupled to said framework and the other bottom part being fastened to said pouch.

4,438,942

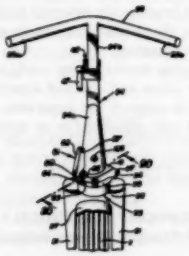
FOLDABLE AND PORTABLE VEHICLE

David T. Hon, Los Angeles, Calif., assignor to Hon Corporation, Los Angeles, Calif.

Division of Ser. No. 233,624, Feb. 12, 1981. This application Sep. 29, 1982, Ser. No. 427,435

Int. Cl.³ B62K *15/00*

U.S. Cl. 280—278 **17 Claims**



1. In a foldable and portable bicycle having a frame and a front wheel mount at the front end of said frame, a handlebar and steering assembly comprising:

a front wheel support having an upper end and a lower end portion extending downwardly from said upper end, and carrying a front wheel with an axle mounted on said lower end;

a handlebar having a central portion that normally is disposed above said upper end, and laterally projecting opposite end portions;

an elongated steering post having an upper end that is joined to said central portion and a lower end spaced above said wheel support;

steering post hinge means at the lower end of said post and including a hinge and a hinge base above said upper end of said wheel support, said hinge means defining a pivotal axis offset to one side of said post for swinging of the post from a normal upright position over said front wheel support to a depending folded position in which the post is offset laterally and longitudinally from the front wheel support and extends downwardly alongside and lies closely against the front wheel;

said steering post hinge means including means for turning said handlebar from a normal position in which said opposite end portions project laterally on opposite sides of the wheel to a generally front-to-rear position to lie alongside the wheel during said swinging movement of the post to the depending folded condition;

means for connecting said hinge base to said front wheel support through the front wheel mount;

and selectively operable post locking means for holding the steering post securely in its normal upright operating position relative to said hinge base and releasable to permit the post to swing to its folded position.

4,438,943

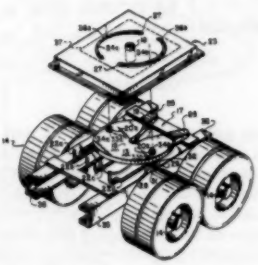
FIFTH WHEEL SAFETY DEVICE FOR TRACTOR TRAILERS

Alfred M. Hebert, Skidmore Rd., Pleasant Valley, N.Y. 12569

Filed Mar. 1, 1982, Ser. No. 353,200

Int. Cl.³ B62D *53/08*

U.S. Cl. 280—432 **3 Claims**



3. A safety device for tractor trailers actuable with the truck brakes comprising:

a bed plate on the trailer having a downwardly extending king pin and a pair of diametrically opposed slots extending upwardly into the bed plate on both sides of the king pin,

a fifth wheel mounted on the tractor having a notched portion to engage the king pin and a pair of oppositely situated pistons each piston having a plunger element which extends upwardly into one of said slots in the said bed plate, and,

means for actuating the plunger elements simultaneously with the brakes to forcefully engage on upper surfaces of the slots under pressure to prevent jackknifing of the trailer, each of said plunger elements including a roller bearing at the end thereof to contact said upper surface.

4,438,944

TOWING AND CARRYING SYSTEMS

Leonard B. Della-Moretta, 1796 Russell Pl., Pomona, Calif. 91767

Filed Mar. 3, 1981, Ser. No. 240,199

Int. Cl.³ B62D *53/00*

U.S. Cl. 280—460 R **16 Claims**

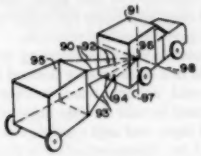
1. A towing connection for connecting a trailer having a pair

of wheels toward its rear end only, to a towing vehicle, including in combination:

three linear links, including one upper link and two lower links, the lower links being generally horizontal;

a first corresponding series of spaced-apart ball joints connecting the links to a forward portion of the trailer; and

a second corresponding series of spaced-apart ball joints connecting the links to a rearward portion of the towing vehicle, said second series of joints being closer together than the first series so that the links converge such that extended lines upon which the links lie approximately



intersect a remote forward generally vertical instantaneous turning axis, and approximately intersect a remote forward generally horizontal carrying axis; and

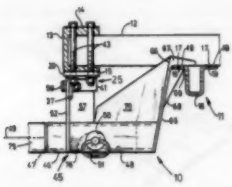
wherein the ball joint connecting the upper link to the towing vehicle is positioned somewhat aft of a transverse vertical plane passing substantially through the ball joints connecting the lower links to the towing vehicle, such that the trailer front is at the same level when the trailer is in a preselected turning angle in either direction with respect to the towing vehicle as it is when in the normal straight ahead towing position, whereby rise and fall of the trailer front during turning is substantially minimized.

4,438,945

ASSEMBLY FOR MOUNTING A WORK OBJECT ON A VEHICLE OR THE LIKE

Stanley F. Curtis, Exeter, Calif., assignor to Pollution Controls Industries, Inc., Tulare, Calif.

Filed Jan. 27, 1982, Ser. No. 343,224
Int. Cl.³ B60D 1/00
U.S. Cl. 280—501 **4 Claims**



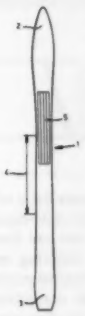
1. An assembly for mounting a work object on a vehicle having a frame with a pair of transversely extending structural members disposed in spaced, substantially parallel relation to each other and in substantially right-angular relation to a longitudinal axis of the vehicle, the assembly comprising a first component adapted to be mounted in an assembled position on one of said structural members and having a mounting plate and projection extending therefrom substantially in a common direction relative to the first component; and a second component having a mount for said work object, a mounting plate and projection extending therefrom substantially in a common direction relative to the second component and a support engageable with the other of said structural members in depending relation in an assembled position with said first component wherein the plates and projections of the first and second components can be interlocked with each other to secure the mount for said work object on the vehicle in substantial alignment with said longitudinal axis of the vehicle, and wherein said projections of the first and second components have tubular configurations dimensioned for fitted engagement with each other along an axis substantially normal to the longitudinal axis of the vehicle when the first and second components are in the assembled positions to resist lateral movement of the second component relative to the first component.

4,438,946

SLALOM SKI WITH VIBRATION DAMPER

Yves Piegay, Voiron, France, assignor to Skis Rossignol S.A., Voiron, France

Filed Apr. 7, 1982, Ser. No. 366,357
Claims priority, application France, Apr. 9, 1981, 81 07519
Int. Cl.³ A63C 5/00
U.S. Cl. 280—602 **4 Claims**



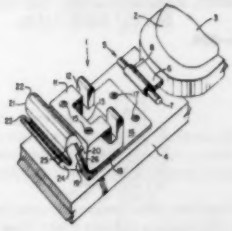
1. A slalom ski having a body with a tip zone, a heel and a boot-supporting tread zone, said body having a structure incorporating in its interior a band of stressed viscoelastic material of a length ranging substantially between 15% and 30% of the length of said body, said band extending from substantially the middle of said tread zone toward said tip zone and terminating short of the latter.

4,438,947

TOE BINDING FOR SKIS

Roderick A. Cooper, 4310 Graham Dr., Pierrefond, Quebec, Canada

Filed Aug. 16, 1982, Ser. No. 408,591
Claims priority, application Canada, Aug. 17, 1981, 383992
Int. Cl.³ A63C 9/10
U.S. Cl. 280—615 **5 Claims**



1. A toe binding for use with a ski and a boot of the type including a substantially T-shaped toe piece extending forwardly from the toe end of the boot, said binding comprising a body for mounting on a ski; a substantially T-shaped groove in said body for receiving said toe piece; pin means slidable in

said body for movement between a toe piece retaining position and a toe piece release position; spring means connected to said body biasing said pin means toward said toe piece retaining position; and handle means connected to said spring means for moving said pin means from the toe piece retaining position to the release position, whereby the toe piece can be inserted into or removed from the ski binding.

4,438,948

SOLE-SUPPORT PLATE

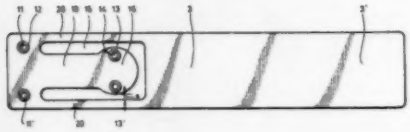
Ulrich Gertsch, Interlaken, Switzerland, assignor to TMC Corporation, Baar, Switzerland

Filed May 17, 1982, Ser. No. 379,222

Claims priority, application Switzerland, May 25, 1981, 3390/81

Int. Cl.³ A63C *9/081*

U.S. Cl. 280—618 **13 Claims**



1. In a sole-support plate for a release ski binding, including means for supporting said sole-support plate on the upper side of a ski so that at least one end thereof is movable laterally of the ski, and including restoring means for resiliently urging said plate back into its original position after such lateral movement, the improvement comprising wherein said restoring means includes at least one first opening provided in said sole-support plate, and wherein said sole-support plate, at least in the region of said first opening, is made of a resilient material, said first opening weakening said sole-support plate in the region of said resilient material so that said lateral movement is effected by elastic deformation of the region of said sole-support plate having said first opening therein and, after the lateral movement, said sole-support plate is returned automatically to its original position by said resilience of said region of said sole-support plate having said first opening therein.

4,438,949

AUTOMATICALLY FASTENING SEATBELT SYSTEM

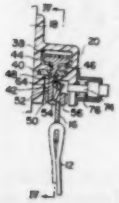
Hiroshi Tsuge, Chiryu; Mitsuaki Katsuno, Toyota; Yuji Nishimura, Nagoya; Tatsushi Kubota, Okazaki; Tadao Yamada, Chiryu, and Yoshihiro Hayashi, Kasugai, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Oct. 7, 1981, Ser. No. 309,509

Claims priority, application Japan, Oct. 15, 1980, 55-143974

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **13 Claims**



1. An automatically fastening seatbelt system comprising:

a guide rail laid on a vehicle body;

a driving force transmitting member movable along said guide rail;

an anchor plate connected to an occupant-restraining-webbing and movable along said guide rail;

a support device movable along said guide rail and supporting said anchor plate on said guide rail for applying a driving force of the driving force transmitting member to said anchor plate to move said anchor plate along said guide rail, whereby said webbing is caused to approach or recede from the occupant; and

a release device provided at a predetermined position in the longitudinal direction of said guide rail for releasing said anchor plate from said guide rail when said support device reaches said predetermined position,

wherein said driving force transmitting member is a flexible tape movable in a slide groove formed in the guide rail, a portion of said anchor plate is extended through an opening formed in said flexible tape to receive a driving force of said tape, and said support device is movable by being guided by an anchor groove formed in the guide rail and engaged with the anchor for preventing said anchor plate from being detached out of the opening of said tape.

4,438,950

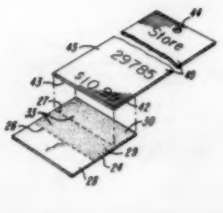
COMPOSITE LABEL WEB, PRICE TAG AND RE-PRICE LABEL COMBINATION, AND METHOD OF PRICE AND RE-PRICE MARKING

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 236,414, Feb. 20, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,087

Int. Cl.³ B32B *3/10*

U.S. Cl. 283—70 **10 Claims**



1. Method of re-pricing, comprising the steps of: providing a price tag having an outer side and an underside with price data printed on its outer side, providing a re-price label having an outer side and an underside with first and second spaced lines of weakening dividing the re-price label into first, second and third label parts, the outer side of the re-price label being free of adhesive, the underside of the re-price label having pressure sensitive adhesive, printing re-price data on the outer side of the first label part which differs from the price data on the price tag, applying the third label part by means of the adhesive to the underside of the price tag with the first and second label parts projecting beyond the price tag, and folding the first label part about the first line of weakening and adhering the first and second label parts together with the adhesive so that the re-price data printed on the first label part are on the same side as the printed price data on the price tag.

4,438,951

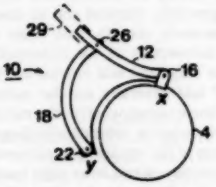
Patent Not Issued For This Number

4,438,952

PIPE COUPLING

Harry Z. Tabor, Jerusalem, Israel, assignor to The Scientific Research Foundation, Jerusalem, Israel

Filed Jul. 7, 1981, Ser. No. 281,094
Claims priority, application Israel, Jul. 11, 1980, 60562
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—39 **10 Claims**



1. A quickly-attachable coupling for pipes, characterized in that it comprises: a flexible tube having an internal diameter approximately equal to the outer diameter of the pipe to be coupled; and a cylindrical spring overlying said flexible tube; said cylindrical spring including a closely-wound coil of flat spring material having more than one complete turn, in both an open and closed position and having an inner diameter in its relaxed condition less than the outer diameter of the flexible tube said coil spring being partially uncoilable under stress to open same by increasing its inner diameter at least to the outer diameter of the flexible tube and of the pipe to be coupled the opposite ends of the flat spring material forming the cylindrical spring including a toggle mechanism actuatable to one position for uncoiling the cylindrical spring under stress to open same, or to a second position permitting the relaxing of the cylindrical spring to close same and to cause it to compress the flexible tube into tight engagement with the pipe for the complete length of the coil spring.

4,438,953

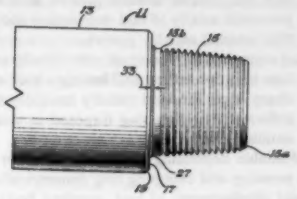
TOOL JOINT BENCH MARK

Albert C. Timme, Jr., Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Feb. 27, 1981, Ser. No. 238,720
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—93 **5 Claims**

1. An improved bench mark for a drill pipe member having tool joints on each end of the type having threads spaced from the make-up shoulder, comprising:

an edge formed in each of the tool joints in the space between the threads and make-up shoulder, the edge extending continuously around the space between the threads and make-up shoulder; the edges being located the same distance from their respective make-up shoulders.

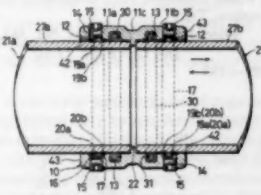


4,438,954

PIPE COUPLING

Tadashi Hattori, Kishiwada, Japan, assignor to Isuzu Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 27, 1981, Ser. No. 325,124
Claims priority, application Japan, Mar. 26, 1981, 56-44619
Int. Cl.³ F16L *17/02*
U.S. Cl. 285—104 **9 Claims**



1. A pipe coupling comprising:

a coupling body having at least two sections, at least one of which is of substantially cylindrical form with an opening mouth and includes a first and a second internal annular grooves;

said first internal annular groove being defined by an innermost annular wall which extends sutstantially transversely of a longitudinal axis of said one section in which said first internal annular groove is formed and is disposed axially innermost of said one section, and an outermost annular wall which is tapered down toward said opening mouth and disposed outermost of said one section, and an intermediate annular wall which is of substantially arcuate

profile in cross section and interposed between said innermost wall and said outermost wall;

a split clamping ring made of elastic metal and disposed in said first internal annular groove so as to be slightly displaceable axially of said one section and relatively to said first internal annular groove;

said clamping ring being of substantially arcuate configuration in cross section and having a pair of spaced circular sharp edges directed radially inwardly thereof;

a deformable sealing ring disposed in said second internal annular groove; and

adjustable depressing means provided for adjustably compressing said clamping ring diametrically;

axial displacement of said coupling body relative to said clamping ring engages said arcuate configuration of said clamping ring with said tapered outermost annular wall for forcing said split clamping ring radially inwardly.

4,438,955

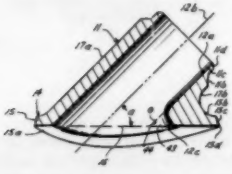
ACUTE ANGLED VESSEL CONNECTOR

Bobby W. Ryan, Houston, Tex., assignor to WFI International, Inc., Houston, Tex.

Filed Jan. 21, 1982, Ser. No. 341,559

Int. Cl.³ F16L *13/02*

U.S. Cl. 285—189 **5 Claims**



1. An acute angled vessel connector adapted to be mounted in a vessel or pipeline and to provide a high pressure angled connection from such vessel or pipeline to a branch pipe, comprising:

a generally cylindrical main body having an interior body bore formed of an interior cylindrical wall and having an exterior wall which is at least in part cylindrical, said interior body bore having a central axis;

a contoured mounting rim formed integrally with one end of said main body, said mounting rim being generally elliptical in configuration and being at a predesignated acute angle with respect to the central axis of said interior cylindrical body bore, said mounting rim being adapted for welding in a flush position in an opening in a vessel or pipeline such that said generally cylindrical main body and said interior cylindrical body bore extend at said predesignated angle acute with respect to the surface of such vessel or pipeline;

said main body having at its other end means for connecting said vessel connector to a branch pipe;

said contoured mounting rim including a generally annular mounting ledge having an undersurface with an outer edge which is generally elliptical and an inner edge approximately concentric thereto, said inner edge being formed by the intersection of the undersurface of said generally annular ledge and said interior body bore; and

said inner edge of said generally annular mounting ledge includes a fluid impact zone wherein the radius of curvature of said inner edge is substantially larger than the radius of curvature of the remaining portions of said edge, said radius of curvature of said inner edge being measured in a direction perpendicular to the plane of said curved undersurface.

4,438,956

JOINING OF COMPONENTS

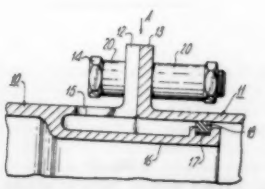
Thomas J. Jones, and David S. Curtis, both of Bristol, England, assignors to Rolls Royce Limited, London, England

Filed Dec. 2, 1982, Ser. No. 446,256

Claims priority, application United Kingdom, Dec. 22, 1981, 8138543

Int. Cl.³ F16L *23/02*

U.S. Cl. 285—223 **5 Claims**



1. An assembly comprising two components to be secured together and between which relative movement is tolerated wherein each component is provided with means for securing the components together at a joint face, at least one of the components is provided with slots adjacent the joint face to impart flexibility to that component, and one of the compo-

nents is provided with a bridging piece which extends from the region of its attachment to said one component in a direction that covers the slots and is provided at an end thereof with a seal means that engages with the other component thereby to provide a seal which is operable against the leakage of fluid through the slots.

4,438,957

CONSTANT MOTION SWIVEL JOINT

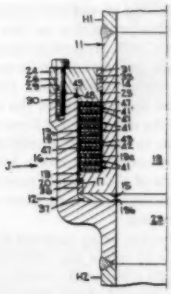
Michael R. Williams, Houston, and Albert R. Tucker, Spring, both of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 12, 1981, Ser. No. 243,169

Claims priority, application United Kingdom, Apr. 1, 1980, 8010878

Int. Cl.³ F16L *27/00*

U.S. Cl. 285—223 12 Claims



1. A constant motion swivel joint for connecting two lengths of pipe, said connector comprising:

a generally cylindrical inner member having a bore extending axially therethrough, and having a flange extending radially outward from the outer surface of said inner member;

means for connecting a first length of pipe to communicate with said axial bore of said inner member;

a generally cylindrical outer member having a bore extending axially from a first end thereof through a portion of said outer member, said outer member having an axially extending passage to receive said inner member, said passage extending from a second end of said outer member through a portion of said outer member;

means for connecting a second length of pipe to communicate with said axial bore of said outer member;

a plurality of annular metal rings mounted between an outer wall of said inner member and an inner wall of said outer member, each of said rings having a low friction coating on one side thereof and a layer of elastomeric material bonded to the other side, said metal rings reducing extrusion of said bonded elastomeric material under pressure and said elastomeric material flexing to accommodate a predetermined amount of rotary motion between said inner and said outer members without slippage between adjacent annular rings; and

means for compressing said rings between said radial flange of said inner member and a portion of said outer member to provide a fluid-tight seal between said inner and said outer members.

4,438,958

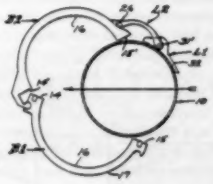
CLAM-SHELL COUPLING FOR JOINING BEADED TUBES

Herbert A. De Cenzo, 3917 Cannon Ave., Las Vegas, Nev. 89121

Division of Ser. No. 112,956, Jan. 17, 1980. This application Feb. 4, 1982, Ser. No. 345,551

Int. Cl.³ F16L *21/06*

U.S. Cl. 285—234 21 Claims



1. A split coupling of clam-shell configuration for sealed lateral application over the radially beaded open end of a tube section, and including;

a pair of segmental body members separable at a diametrically disposed plane coincidental with a central longitudinal axis and at which plane opposite side faces of the body members have abutted interface engagement,

a longitudinal bore concentric with said axis and extending through the pair of body members to open at one end thereof for the reception of an end portion of the tube section,

a counterbore in the body members and of greater diameter than the longitudinal bore to receive the radial tube section bead and extending to an inwardly disposed shoulder engageable with the radial tube section bead thereby to prevent separation of the tube section therefrom,

one side of the body members being joined by hinge means,

the other side of the body members being releasably joined by latch means comprised of longitudinally disposed concaved seats formed in radial enlargements outward of the abutted interface engagement at said other side of the body members respectively, a link rotatively carried by one body member and contiguously engageable over the radial enlargements of said body members, and a toggle clamp rotatively carried by the link and releasably engaged with a seat in said other body member,

a circumferential seal carried at said one end of the body members and comprised of depressible segments projecting radially inward from the bore of each body member to engage with the outer diameter wall of a tube section extending therethrough, said seal segments having male and female formation and at least one of which extends circumferentially from the abutted side interface engage-

ment of said body members for reception one within the other,

and a longitudinal seal carried at each abutted interface engagement of the opposite side faces of said body members and comprised of a depressible section projecting from the side face of one body member to engage with the side face of the other body member at said abutted interface engagement thereof and extending from the circumferential seal segments at the one end of the body members.

4,438,959

TORSIONALLY DEFLECTABLE SEAL RING ASSEMBLY FOR FLUID-RECEIVING SYSTEMS

Gordon A. Valentine, Denver, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.

Filed Dec. 2, 1981, Ser. No. 326,521
Int. Cl.³ F16L *19/08, 25/00, 35/00*
U.S. Cl. 285—340 **14 Claims**

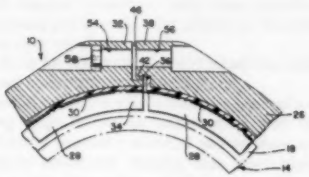
1. In a fluid-receiving assembly first and second relatively axially displaceable structures, said first structure having a tubular configuration for receiving fluid under pressure, said second structure having at least a portion received in said first structure, a torsionally deflectable seal ring received in said first structure and circumferentially surrounding said portion of said second structure, said seal ring being formed with at least a pair of diagonally opposite inner and outer corner edges and being torsionally deflectable to establish a seal between said first and second structures, an adapter formed separately of said first and second structures and having a tubular cross section, said adaptor being received in said first structure for axial displacement with one of said structures relative to the other of said structures, and first and second formations delimiting a cavity receiving said seal ring and positioned to engage said inner and outer corner edges, respectively, upon relative axial displacement of said structures for torsionally deflecting said seal ring to its seal-establishing condition, one of said formations being formed in part by said adapter and in part by a preselected one of said structures, and the other of said formations being formed on the other of said structures, said one of said formations being defined by a peripherally extending surface and by a further surface adjoining said peripherally extending surface, said peripherally extending surface being formed on said preselected one of said structures, and said further surface being formed on an end of said adapter and being contained in a conical envelope intersecting said peripherally extending surface at an obtuse angle such that said peripherally extending surface and said further surface cooperate to define a peripherally extending corner which receives one of said diagonally opposite corner edges of said seal ring.

4,438,960

CLAMPING & SEALING SYSTEM FOR FLANGED DUCTS

Glenn G. Carroll, and Joseph C. Frank, both of Port Hope, Mich., assignors to Alcolite Products Corp., Mt. Clemens, Mich.

Filed Jul. 16, 1982, Ser. No. 399,023
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—367 **4 Claims**



1. In a system for removably clamping and sealing together the ends of a pair of connecting ducts of circular cross-section wherein each duct end is provided with a peripheral flange which is engageable by a clamping ring adapted to surround the flanges of the ducts to be joined, the ring being shaped and dimensioned to engage the flanges and force them together upon tightening of the clamping ring, the ring being formed with a short circumferential opening to enable it to be resiliently spread apart for assembly over the duct flanges and provided with adjustable securing means to draw together the two ends of the ring at the ring opening to tighten the ring upon the duct flanges to thereby clamp and seal the joint between the pair of ducts, the improved clamping ring which comprises:

a first end of the ring having an undercut recess to receive an integral non-adjustable projection on the second end of the ring, said recess and projection being shaped and positioned so that said projection can be inserted into said recess only by the temporary resilient relative displacement of the first and second ends of the ring in a radial direction, release of the displacement force permitting said first and second ends to return to a position wherein said recess and projection cooperate to form a temporary latch which holds the ends of the ring in a predetermined relative position and prevents the ends from separating in a circumferential direction;

said predetermined position being selected to provide sufficient clamping force to retain the connected ducts in an unclamped but loosely connected condition while permitting the ducts to be rotated about their common axis for final position adjustment prior to application of full clamping force by the adjustable securing means;

adjustable securing means on said clamping ring adapted to draw the two ends of the ring together after said projection and recess have established said temporary latch, to thereby tighten and clamp the ring onto the duct flanges and tightly draw the connecting ducts together.

4,438,961

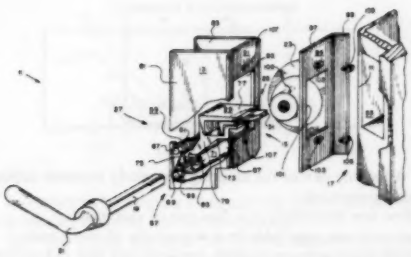
DOOR LATCH MEANS

C. Lynwood Grisham, Memphis, and Freddie A. Grisham, Bartlett, both of Tenn., assignors to Grisham Corporation, Arlington, Tenn.

Filed Apr. 23, 1982, Ser. No. 371,413
Int. Cl.³ E05C *5/00*
U.S. Cl. 292—67 **2 Claims**

1. Door latch means for latching a swingably mounted door, said door latch means comprising a boxlike housing, striker means disposed within said boxlike housing for latchable engagement with suitably established jammounted keeper means and for enabling said door latch means to properly latch the door while in the closed position thereof, a rock shaft extend-

ing through said housing and being coupled with said striker means and carrying knoblike means at either end thereof for providing arcuate movement of said striker means thus facilitating unlatching the closed door, first striker actuator means for causing latching action of said latch means by establishing a rectilinear movement of at least a portion of said striker means which is caused to operatively engage the keeper means thus latching the door as it swings toward the closed position thereof, and second striker actuator means for unlatching said latch means by establishing arcuate movement of said striker means through rotation of said rock shaft, thus said second striker means enables said door latch means to be unlatched by a mere turning action of either of said knoblike means; said striker means including mainbody means responsive to said second striker actuator means and being coupled with said rock shaft for arcuate movement therewith, and tonguelike means responsive to said first striker actuator means for latchlike engagement with the keeper means, said mainbody means being provided with a passageway especially constructed for matably receiving said rock shaft in such a manner that when said rock shaft is manually turned about its longitudinal axis said mainbody means is caused to be swingably carried therewith, said mainbody means being further provided with a slot for slidably receiving said tonguelike means; said first striker actuator means including first bias means disposed within said slot for operable engagement with said tonguelike means and



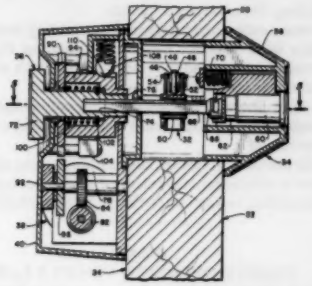
for yieldably urging said tonguelike means toward the keeper means; said second striker actuator means including second bias means disposed within said boxlike housing for operable engagement with said mainbody means and for yieldably urging said striker means swingably toward the keeper means; said second striker actuator means including support means for pivotally supporting said mainbody means within said boxlike housing; said second bias means including torsion spring means having a coiled member and a pair of torsion applying leg members constituted by integrally joined extensions of said coiled member; said second striker actuator means additionally including coil pin means fixedly attached to said boxlike housing for circumflexably receiving and thus supporting said coiled member, and leg pin support means fixedly attached to said boxlike housing for engagement with and thus supporting one of said leg members while the leg member other than said one of said leg members is bearing against said mainbody means so as to yieldably urge said striker means swingably toward the keeper means; said support means including an elongated sleevelike member provided with an elongated interruption coextending the length thereof; said mainbody means including a cylindricallike member which is substantially concentrically disposed about said passageway with the diameter of said cylindricallike member being compatibly sized with respect to the internal diameter of said sleevelike member for contiguous reception therein.

4,438,962

ALTERNATE MANUALLY AND ELECTRICALLY ACTUATED BOLT

Paul G. Soloviff, Tustin, Calif., and William C. Lichtenfels, West Hartford, Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 2, 1981, Ser. No. 308,150
Int. Cl.³ E05B *47/00*; E05C *1/06*
U.S. Cl. 292—144 **36 Claims**



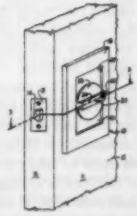
1. In an alternate manually and electrically actuated bolt of the type having a bolt movable between extended and retracted positions, manual operator means operably connected to said bolt for moving said bolt between said extended and retracted positions upon manual actuation thereof, an electric motor, and gear means operably connected to each of said electric motor and said bolt for moving said bolt between said extended and retracted positions upon electrical actuation of said motor; the improvements including: said gear means comprising an oppositely rotatable driven gear operably connected to said bolt for moving said bolt between said extended and retracted positions upon opposite rotatable movement of said driven gear, a driving gear segment operably connected oppositely movable by said electric motor, said driving gear segment being constructed and arranged relative to said driven gear engaging said driven gear moving said bolt between said extended and retracted positions and totally disengaging said driven gear upon said bolt moving into either of said extended and retracted positions; whereby, said bolt may be moved from either of its extended and retracted positions to the other of its extended and retracted positions by said manual operator means without movement of said driving gear segment and said electric motor.

4,438,963

DOOR LATCH MECHANISM WITH GENERALLY LINEARLY MOVABLE OPERATING MEMBER

Peter Friedrich, 44 Riverside Ave., Lyndhurst, N.J. 07071

Filed Jun. 26, 1981, Ser. No. 277,876
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—168 **16 Claims**



1. A door latch mechanism including:

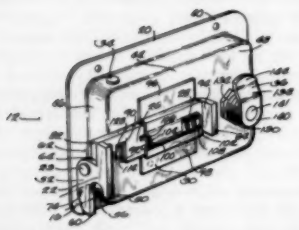
(a) manual operating means adapted for mounting on the face of a door and including a manually accessible operating member generally linearly translatable substantially parallel to the face of the door;
(b) a door latch assembly for location within the door between its faces, the door latch assembly including a movable door latch element for latching the door closed and operable between an extended, latched position and a retracted, released position, and door latch actuator means operatively connected to the door latch element for effecting the movement thereof;
(c) means connected between the operating member and the door latch actuator means for operating the door latch actuator means and moving the door latch element when the operating member is moved linearly;
(d) said lineraly translatable operating member being mounted for rotational movement in addition to said translation; and
(e) the mechanism further comprising locking means responsive to rotational movement of the operating member for preventing retraction of the door latch element.

4,438,964

PADDLE OPERATED VEHICLE LATCH

William S. Peters, Appleton, Wis., assignor to Pierce Manufacturing, Inc., Appleton, Wis.

Filed Jun. 18, 1981, Ser. No. 275,006
Int. Cl.³ E05C *3/26*; E05B *13/10*
U.S. Cl. 292—216 **10 Claims**



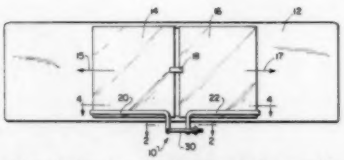
1. A rotary latch mechanism for engaging a latch post, comprising:
A. a cam pivotally mounted for rotation between engaged and disengaged positions about an axis parallel to the direction of extension of said latch post, said cam having peripheral edges and first and second parallel faces;
B. first biasing means to bias said cam toward said disengaged position at all times;
C. a first recess, defined by first opposed outwardly extending leading and following edges formed in said cam, to receive said post when said door is closed, wherein said leading edge clears said post to allow said post to enter said recess when said cam is in its disengaged position, said leading edge engages said post in said recess to latch said door when said cam is rotated to its engaged position, and said following edge engages said post in said recess as said door is closed to rotate said cam from its disengaged position to its engaged position;
D. a second recess, defined by second opposed outwardly extending leading and following edges formed in said cam;
E. a latch bar having first and second ends, disposed parallel to said axis, and mounted for sliding lengthwise between a retracted position clear of said cam, an intermediate position wherein said first end bears against the nearest face of said cam when said cam is in its disengaged position, and an extended position wherein said first end passes into said second recess and engages said second following edge to latch said cam in its engaged position;
F. second biasing means biasing said latch bar toward said extended position when said latch bar is free to slide;
G. unlatching means to retract said latch bar to said retracted position from said extended position, whereby to withdraw said first end from said second recess to free said cam for rotation to said disengaged position responsive to said first biasing means, and thus to release said latch post when said unlatching means is operated; and
H. safety latch means to latch said cam in a safety position between its engaged and disengaged positions to permit rotation of said cam toward said engaged position and to prevent rotation of said cam toward said disengaged position, said safety latch means comprising a step formed in said nearest cam face adjacent said second following edge to receive said first end of said latching bar when said cam is in said safety position, and to clear said first end to allow extension of said latching bar when said cam is rotated to said engaged position.

4,438,965

LOCKING DEVICE FOR VEHICLES EQUIPPED WITH SLIDING WINDOWS

Chris Stearns, Farmington, N. Mex., assignor to C. K. Locks Limited, Farmington, N. Mex.

Filed Oct. 8, 1981, Ser. No. 309,582
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—256.75 **8 Claims**



1. A locking device for securing oppositely movable sliding panels, comprising:
a first arm attachable to a first one of said panels;
a second arm attachable to a second one of said panels;
a bolt detachably connectable between said first and second arms, said bolt having a pivot joint connected to said first arm and a slot for receiving said second arm; and
a nut threadably engaging said bolt and extending across said slot for holding said second arm in said slot, wherein said second arm includes a notched portion engaging said bolt within said slot.

4,438,966

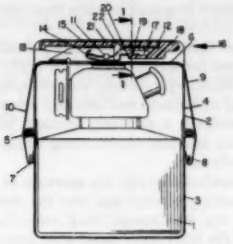
LOCK FOR CARRYING CASES OF RESPIRATORS

William Eckstein, Sereetz, and Gerd Pantaleon-Stemberg, Mölln, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,493
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3032915
Int. Cl.³ E05C *19/18*; B65D *45/16*
U.S. Cl. 292—259 R **12 Claims**

1. A lock and seal combination for a carrying case of a respirator having a container part and a cover member, with at least one strap having strap ends held together by a toggle clamp to hold the container part to the cover member, the toggle clamp having a lever, comprising: a sealing piece (5) engaged to the cover member and having a recess for receiving the lever (12), one strap end having a hook portion (14) with an opening (20) in said hook portion; and the sealing piece having a portion with a protrusion (19) extending therefrom engaged into the hook portion opening; the toggle clamp including a

holding member (13) connected to the other strap end for pivotally carrying the lever; one end of the lever engaged with



the hook portion connected to the one strap end and another end of the lever engaged into the recess of the sealing piece.

4,438,967

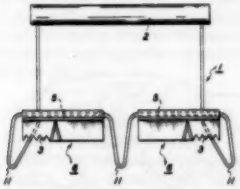
BAG HANDLE

Donald L. Fox, 76 Maple Ave., Greenwich, Conn. 06830

Filed Aug. 3, 1981, Ser. No. 289,408

Int. Cl.³ B65D *33/06*

U.S. Cl. 294—164 **9 Claims**



1. Apparatus for keeping a bag opening closed and providing a handle for carrying the bag comprising:

(a) frame means having a first portion thereof for gripping the bag and a second portion thereof for carrying the bag;

(b) means for engaging the bag opening with the frame means in the vicinity of the first portion of the frame means whereby after the bag is engaged, any force tending to pull the bag off of the frame means places more force on the engagement means; and

(c) said first portion of said frame means including a stop, said engaging means including a non-spring-biased rotatable member extending transversely of said frame means for support of the bag, said member being mounted on said first portion of said frame means at a site spaced apart from said stop to provide an entry space for entry of said bag between said member and said stop and frame means, said rotatable member having an edge with gripping means movable towards said stop into said entry space for gripping the bag upon rotation of said member.

4,438,968

DEFLECTING DEVICE FOR TRUCK LOAD

Ralph Worthing, P.O. Box 715, Kamloops, B. C., Canada (V2C 5L7)

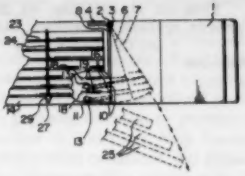
Filed Mar. 3, 1982, Ser. No. 354,330

Claims priority, application Canada, Apr. 2, 1981, 374486

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—1 R **5 Claims**

1. A deflecting device for deflecting the load of a trailer, consisting of a plate vertically positioned across the front of the trailer for pivotal movement about a vertical pivot at one



side of the trailer and restraining means between the trailer and the plate for limiting the amount of pivoting of the plate.

4,438,969

COLLISION RESISTANT CONSTRUCTION FOR A DOOR OF A VEHICLE

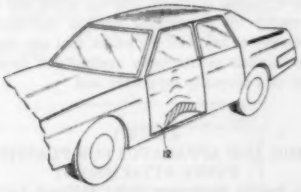
Ken Kamijo, Zushi, and Kouzo Maeda, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Nov. 6, 1981, Ser. No. 319,102

Claims priority, application Japan, Nov. 7, 1980, 55-160193[U]

Int. Cl.³ B60J *5/04*

U.S. Cl. 296—146 **12 Claims**



1. A collision resistant construction for a door of a vehicle having a door opening defined above a side sill, a hinged side door operable to open and close said door opening and a seat assembly located in the vehicle cabin beside said door opening, comprising:

a sliding mechanism securely mounted on a floor of said vehicle, said sliding mechanism having mounted thereon a seat proper frame of said seat assembly for permitting a sliding movement of said seat assembly in a fore-and-aft direction relative to said floor;

first means securely connected to said sliding mechanism and said seat proper frame, said first means having a rigidly constructed extreme end portion which extends outwardly toward said door opening in the vicinity of said side sill; and

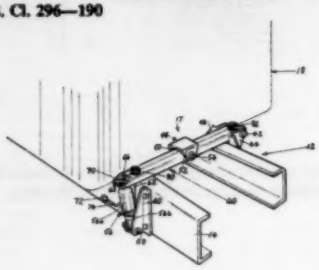
second means provided on said hinged side door to be movable therewith, said second means being positioned at a portion of the door which faces said extreme end portion upon normal closing of said side door,

whereby, when said side door tends to be driven into the vehicle cabin by an external force applied thereto, said second means is brought into secure engagement with said extreme end portion of said first means thereby preventing said door from continuing the driving-in motion.

4,438,970
VEHICLE CAB SUSPENSION

Graeme B. Boucher, Ferntree Gully, Australia, assignor to Paccar Inc., Bellevue, Wash.

Filed Jul. 31, 1981, Ser. No. 288,983
Claims priority, application Australia, Oct. 9, 1980, PB5973
Int. Cl.³ B62D 27/06
U.S. Cl. 296—190 23 Claims

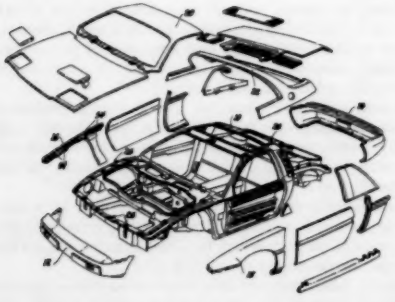


9. A cab suspension for a wheeled vehicle comprising a chassis, a cab on said chassis, pivot means at a first location for pivotally supporting one end of said cab on said chassis for movement relative to said chassis, and support means for supporting the other end of said cab at a second location spaced from said first location permitting vertical movement of said cab relative to said chassis, said support means including an elongated member coupled to one of said cab or chassis for relative rotational movement thereto at a first position along said member, coupled to an opposite one of said cab or chassis for relative rotational movement thereto at a second position along said member spaced from said first position, and coupled to said cab or chassis at a third position along said member by damping means for dampening vertical movement of said member relative to said cab or chassis, said cab thereby being allowed to oscillate substantially vertically in damped movement about said pivotally supported end.

4,438,971
METHOD AND APPARATUS FOR PLASTIC BODY PANEL ATTACHMENT

Wieslaw S. Zaydel, Rochester; Huiki Aldikacti, Orchard Lake, and James G. Bouck, Clarkston, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 15, 1982, Ser. No. 418,200
Int. Cl.³ B62D 27/02
U.S. Cl. 296—191 2 Claims



1. A vehicle body comprising:

a vehicle body structural panel suitably connected to other vehicle body structural panels to provide a self-support body structure;

a vehicle body outer panel having a generally planar apertured mounting surface adapted for attachment on the body structure in spaced relation from the body structural panels;

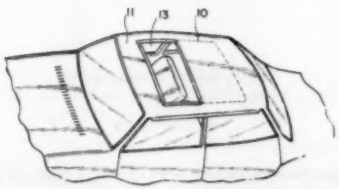
an attachment block having a stamped metal housing with a base adapted for attachment on the body structural panel and a cylindrical projecting wall defining a plastic filled cavity, said cylindrical wall and said plastic being machinable to establish a precisely located body outer panel support face and said plastic being drillable to provide a fastener hole; and

a fastener installed through the aperture of the body outer panel mounting surface and into the drilled hole in the plastic of the attachment block whereby the mounting surface of the body outer panel is securely attached to the support face of the attachment block to attach the body outer panel on the body frame.

4,438,972
OPERATING MECHANISM FOR OPERATING A SLIDING AND TILTING ROOF-PANEL

Yoshinori Katayama, Tokyo; Ryoji Fujiwara, Mizuho, and Tsunetoshi Nishimaki, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa and Johnan Seisakusho Company, Limited, Nagano, both of, Japan

Filed Apr. 28, 1981, Ser. No. 258,465
Int. Cl.³ B60J 7/02; H02P 5/06
U.S. Cl. 296—223 6 Claims



1. An operating mechanism for operating a sliding and tilting roof panel of an automobile and the like, the tilting movement of the roof panel being started after the sliding movement of the roof panel to return the roof panel to its fully closed position is completed, the sliding movement of the roof panel being started after the tilting movement of the roof panel to return the roof panel to its fully closed position is completed, comprising:

(a) an electric motor;

(b) a cable connected to the motor, whereby the cable is moved when the motor is electrically actuated, the cable being also connected to the roof panel, whereby the motor drives the roof panel via the cable when electrically actuated;

(c) a rack engaging the cable, whereby the rack is moved according to the movement of the cable;

(d) a pinion meshing with the rack to be rotated according to the movement of the rack;

(e) a switch-operating member engaging the pinion so as to be moved according to the rotation of the pinion, whereby the position of the switch-operating member represents the position of the roof panel; and

(f) first and second limit switches operated by the switch-operating member, the first switch being operated to cut off the electrical actuation of the motor when the roof panel is slid to its fully closed position, the second switch being operated to cut off the electrical actuation of the motor when the roof panel is tilted to its fully closed position;

whereby the roof panel is automatically stopped at its fully

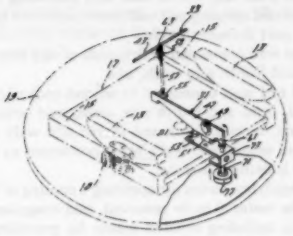
closed position when the roof panel is slid or tilted to its fully closed position.

4,438,973

SWIVEL CHAIR WITH BRAKE

Larry P. LaPointe, LaSalle, Mich., assignor to La-Z-Boy Chair Company, Monroe, Mich.

Filed Aug. 4, 1981, Ser. No. 290,068
Int. Cl.³ A47C 3/02, 3/00
U.S. Cl. 297—349 17 Claims



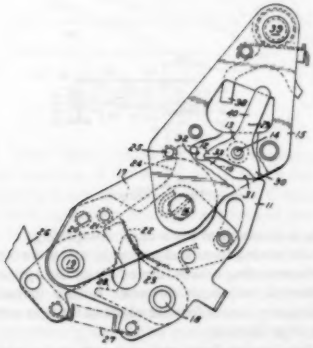
1. A chair comprising a seat frame, a base for the chair, chair support means swively mounting the frame on the base, and brake means acting between the support means and the base to resist swiveling of the chair when it is unoccupied a seat spring system on said seat frame providing a yieldable top crown seating surface, said brake means being connected to and energized by force of the spring system released as it moves to provide said top crown seating surface when a chair occupant lifts his weight from the seat.

4,438,974

GUIDE PROFILE FOR INERTIA LATCH

Fred C. Kresky, Richland, Mich. and Gainesville, Fla., assignors to Keiper U.S.A., Inc., Battle Creek, Mich.

Filed Sep. 24, 1981, Ser. No. 305,187
Int. Cl.³ A47C 1/025; B60N 1/04
U.S. Cl. 297—379 7 Claims



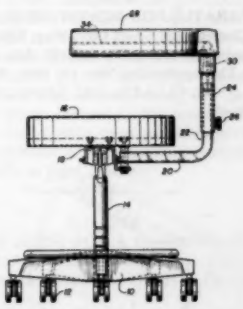
1. Passenger car seat back hinge comprising pivotally connected brackets for respective connections to seat and seat back, inertia latch means for arresting forward seat back tilting under predetermined emergency vehicle deceleration, said latch means including a gravity/inertia actuated latch element pivotally mounted on said seat back bracket for movement between latching and unlatching positions, a cooperating latch stop mounted on said seat bracket engageable by said latch element, said latch element having a center of gravity horizontally displaced from its pivotal center when the car is on a level surface to produce a gravity actuated unlatching moment and vertically displaced to produce a vehicle deceleration inertia actuated latching moment, positive stop means limiting backward pivotal movement of said seat back bracket to a user position, cam means responsive to return of said seat back to user position for overcoming gravity bias of said latch element and producing pivotal movement to a latch engaging attitude, said latch element having substantial additional pivotal travel available in a latch engaging direction to produce full latch engagement in response to initial seat back forward tilting under emergency deceleration conditions, and means to minimize any pivotal lost motion angular clearance for said latch element with said seat back bracket in user position, said horizontal displacement and unlatching moment being reduced upon parking on a downward slope in proportion to the steepness of slope and being subject to further reduction by any pivotal lost motion displacement of said latch element, as might result from applying the brakes in parking on a downward slope, thereby resulting in an ineffective release moment when the combination of downward steepness of slope and lost motion exceed predetermined limits, said means to minimize any pivotal lost motion angular clearance combined with said horizontal displacement accommodating at least a 15° downward parking angle without loss of effective release moment.

4,438,975

ARMREST FOR A SEAT

Ralph J. Williams, New Oxford, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Filed Jun. 21, 1982, Ser. No. 390,015
Int. Cl.³ A47C 7/54
U.S. Cl. 297—412 6 Claims

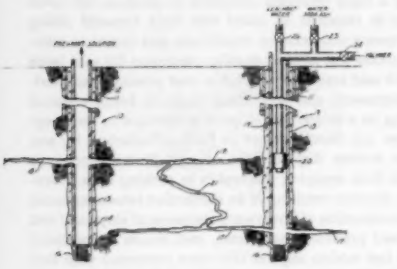


1. An arm rest arrangement for a seat such as a stool and the like comprising a seat member, a post extending perpendicularly relative to an edge of said seat and having sections of two different diameters in axial alignment, a one-way clutch movably supported upon the upper end of said post, an arm connected to said clutch and extending laterally relative to said post, said clutch being circular and being connected to said arm and movable axially upon said post between said sections of different diameters thereof and when engaging said section of larger diameter permitting rotation of said arm in one direction upon said post but preventing reverse direction and when said clutch is disposed upon the post section of smaller diameter said clutch is deactivated to permit rotation of the arm about the axis of the post in said reverse direction.

4,438,976
METHOD OF REPAIR OF SHORT CIRCUITS FOR IN SITU LEACHING

David R. Baughman, Mesa, Ariz., and Jerry R. Bergeson, Golden, Colo., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Aug. 6, 1982, Ser. No. 406,022
Int. Cl.³ E21B *43/26, 43/28, 33/138*
U.S. Cl. 299—4 35 Claims



1. A method for reducing leakage of leachant through a short circuit passage in a subterranean formation between a first fracture in communication with a first well and a second fracture in communication with a second well in an in situ leaching system comprising the steps of:

introducing leachant having a first pH into the subterranean formation surrounding the short circuit passage;

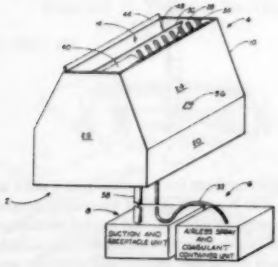
introducing into the short circuit passage an aqueous solution having a second pH and containing a sealing material that gels at the first pH; and

discontinuing liquid flow between the first and second wells for a time sufficient for residual leachant in the subterranean surrounding the short circuit passage to initiate gelation of the sealing material.

4,438,977
APPARATUS FOR REMOVING MATERIAL

Nimrod T. Chapel, 3804 Green Oaks Way, Edmond, Okla. 73034

Continuation-in-part of Ser. No. 113,192, Jan. 18, 1980, Pat. No. 4,274,676. This application May 18, 1981, Ser. No. 264,635
Int. Cl.³ A47L *7/02;* E01H *1/08*
U.S. Cl. 299—64 3 Claims



1. An apparatus for removing material from a surface, comprising:

scraping means for scraping the surface to loosen the material therefrom, said scraping means having a cavity and an opening defined therein and including:

a bottom wall;

a first side wall connected along an edge thereof to a first edge of said bottom wall;

a second side wall connected along an edge thereof to a second edge of said bottom wall, said second edge disposed opposite said first edge of said bottom wall;

a third side wall angularly extending from another edge of said first side wall, which other edge of said first side wall is disposed opposite the edge of said first side wall connected to said first edge of said bottom wall, said third side wall extending inwardly toward said opening;

a fourth side wall angularly extending from another edge of said second side wall, which other edge of said second side wall is disposed opposite the edge of said second side wall connected to said second edge of said bottom wall, said fourth side wall extending inwardly toward said opening and said fourth side wall having an outlet port defined therein;

a first end wall connected to first ends of said first, second, third and fourth side walls; and

a second end wall connected to second ends of said first, second, third and fourth side walls, said bottom wall, said first, second, third, and fourth side walls and said first and second end walls being connected so that said cavity is defined thereby;

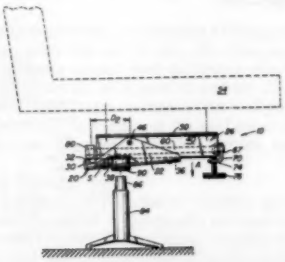
coagulant applying means for applying a coating of a coagulant to the material to be removed, said coagulant applying means including conduit means for providing a passageway by which said coagulant can be carried to said port defined in said fourth side wall for being discharged therefrom when said fourth side wall is moved adjacent the surface from which the material is to be removed; and

withdrawing means, associated with said scraping means, for withdrawing the coagulant coated material which has been loosened from the surface which is scraped when said opening of said scraping means is moved adjacent the surface.

4,438,978
TILT BACK MECHANISM FOR A CHAIR

Tor Arild, P.O. Box 4063, Woodside, Calif. 94062

Filed Nov. 18, 1981, Ser. No. 322,559
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—304 8 Claims



1. A tilt back mechanism for a chair comprising:

a planar yoke having front and rear ends, said yoke including a pair of upstanding braces formed along the opposed side edges thereof, and with the yoke further including an upstanding stop means formed adjacent the rear end along one side edge thereof;

a rocker plate having front and rear ends and a width less than the spacing between the upstanding braces of the yoke enabling the rocker plate to be received therebetween, and with the rocker plate including a second pair of upstanding braces formed along the side edges thereof, with adjacent braces of each pair being pivotally connected enabling the rocker plate to tilt relative to the yoke; and

means for restraining the tilting of the rocker plate in the rearward direction, the restraining means including a

torsion bar extending longitudinally along the rocker plate from the front to the rear end thereof, with front end of the torsion bar being fixably mounted adjacent the front end of the rocker plate and with the torsion bar being supported for rotational movement adjacent the opposed rear end thereof, with the restraining means further including a lever arm fixably connected to the rear end of the torsion bar and extending to said one side edge of the yoke in a manner to be aligned and abutting with the upstanding stop means whereby tilting of the rocker plate in the rearward direction causes a rotational torque to be placed on the torsion bar through the rotational movement of the lever arm such that the tilt back motion is torsionally restricted thereby.

4,438,979

WHEEL COVER

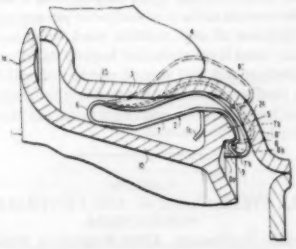
Dieter Renz, Rechberghausen, and Bernd Löper, Korb, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,459

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931163

Int. Cl.³ B60B 7/06

U.S. Cl. 301—37 PB 20 Claims



1. A wheel cover which includes a mounting means for enabling mounting of the wheel cover onto a rim of a wheel, the mounting means including a plurality of U-shaped retaining springs each including a bent-over section and two legs adjoining the bent-over section, each of said retaining springs being adapted to resiliently engage into a channel-like identation provided in the rim of the wheel, characterized in that each of the retaining springs has an unstressed condition and a prestressed condition and is constructed so as to enable a predetermined prestressing thereof by movement of at least one leg of each retaining spring over a predetermined prestressing distance, the movable leg of each retaining spring also being movable from the prestressed condition into an installed condition, one point of the movable leg of the retaining spring being operable to abut at a point of the wheel cover during displacement of the movable leg into the installed condition in such a manner that the effective free bending length thereof is shortened and therewith the spring rate of the retaining spring is increased.

4,438,980

PROPORTIONING VALVE WITH PRESSURE PORT COMMUNICATING WITH STEPPED AREA OF DIFFERENTIAL PISTON

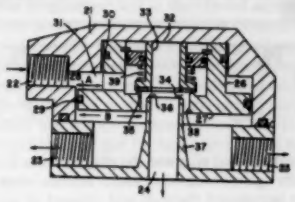
Sidney A. Lippiatt, Bath, England, assignor to Bendix Limited, Bristol, England

Filed Mar. 23, 1982, Ser. No. 361,162

Claims priority, application United Kingdom, Mar. 27, 1981, 8109772

Int. Cl.³ B60T 15/18

U.S. Cl. 303—6 C 4 Claims



1. A pressure proportioning valve having a housing having a pair of opposite ends, said housing having an inlet port, an outlet port, and an exhaust port, a piston slidable in said housing, said piston being stepped to define larger and smaller portions with a shoulder therebetween, first sealing means sealing the smaller portion of the piston with the wall of said housing to define a first chamber between one end of said housing, said smaller portion of the piston and said first sealing means, said first chamber being communicated with said exhaust port, second sealing means sealing the larger portion of the piston with the wall of said housing to define a second chamber between the other end of said housing, said larger portion of the piston, and said second sealing means, said second chamber being communicated to one of said inlet and outlet ports, said shoulder cooperating with the wall of said bore and said first and second sealing means to define a third chamber separated from said first chamber by said first sealing means and from said second chamber by said second sealing means, the other of said inlet and outlet ports communicating with said third chamber, and a double valve assembly including a valve member carried by said piston and responsive to movement thereof to control communication between said chambers, the effective area of said piston responsive to the pressure level in said third chamber being less than the effective area of said piston exposed to the pressure level in said second chamber, said double valve assembly having a stable lap position to maintain a predetermined pressure ratio between said second and third chambers.

4,438,981

HINGE JOINT FOR A TRACK CHAIN

Hans-Wilhelm Harms, Ratingen, Fed. Rep. of Germany, assignor to Intertractor Viehmann GmbH & Co., Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,520

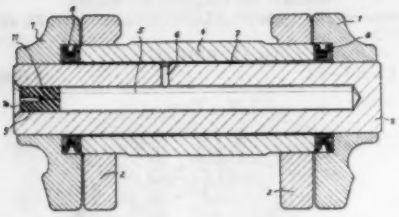
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127104

Int. Cl.³ B62D 55/20

U.S. Cl. 305—14 9 Claims

1. A hinge joint for a track chain comprising a pin having a bore therein, a bushing around the pin and slightly spaced therefrom, a radial or transverse channel through the wall of the pin communicating with the space between the pin wall and the adjacent bushing surface, outer chain links encircling the opposite ends of the pin and having packing receiving recesses in the inwardly facing link walls, packings in said recesses beyond the bushing ends, inner chain links encircling the ends of the bushings and disposed adjacent to but out of contact with the other chain links, and one end of said bore terminating in a blind closed terminus and the other outer or

mouth end of the bore having a plug of compressible material inserted therein and which plug has a channel communicating with a reduced slit leading to the mouth of the bore the plug being compressed along its entire length by the walls of said bore such that said plug forms a seal with said bore along the



entire length of said plug and the plug surfaces forming said slit rest tightly against each other under residual stress, whereupon lubricant introduced through said channel of said plug passes through said slit and into said bore to said packings and wherein said slit is sealed by the residual stress to prohibit lubricant from leaking from said bore through said plug.

4,438,982

GROUND-ENGAGING CONTACT ELEMENT FOR ENDLESS-TRACK VEHICLES

Helge Pettersson, Gislaved, Sweden, assignor to Gislaved Aktiebolag, Gislaved, Sweden

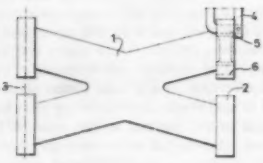
PCT No. PCT/SE80/00353, § 371 Date Sep. 9, 1981, § 102(e) Date Sep. 9, 1981, PCT Pub. No. WO81/01988, PCT Pub. Date Jul. 23, 1981

PCT Filed Dec. 29, 1980, Ser. No. 302,417

Claims priority, application Sweden, Jan. 11, 1980, 8000257

Int. Cl.³ B62D *55/08*

U.S. Cl. 305—35 EB **6 Claims**



1. A ground-engaging contact element for endless-track vehicles, said endless tracks each comprising two separate drawing-elements that interconnect a plurality of contact elements and which run substantially in parallel over at least two wheels of a vehicle on each respective side of the vehicle in a driving direction, said plurality of contact elements of each track being arranged between said pair of drawing-elements to connect said pair of drawing elements with each other, each one of said drawing-elements comprising a chain having articulately connected links, at least some of said links having end points and at least some of said links comprising releasable connecting links.

said contact elements each comprising a generally polygonal plate of elastic polymer material, said plate being flexible in the driving direction of the vehicle wheels as well as in the transverse direction of the vehicle wheels; said contact elements each having a length in said driving direction which at least corresponds to the distance between endpoints of two links of said chains; and enlarged corners projecting substantially perpendicular to the main plane of said polygonal plate, said corners having through holes therein for receiving at least portions of releasable connecting links which are connectable to separate adjacent links in said chains.

4,438,983

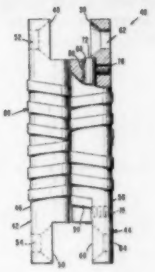
LOW FRICTION PIVOT

Roland O. Davis, Santa Ynez, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Aug. 21, 1981, Ser. No. 295,053

Int. Cl.³ F16C *11/12*

U.S. Cl. 308—2 A **5 Claims**



1. A pivot structure comprising:

a cylindrical base member;

a cylindrical pivot pin member;

band means comprising a band having a first portion and a second portion, with said first portion affixed to one of said cylindrical members and said second portion affixed to one of said cylindrical members, said band means having first and second portions respectively extending around one of said cylindrical members in a first direction and around the other of said cylindrical members in a second direction, said band means being a metallic band and the curved surface of said pivot pin and said base, and the thickness of said metallic band being such that said metallic band is not stretched beyond its fatigue limit, said first portion and said second portion of said band means being configured so that the bending forces said first and second band portions onto said pivot pin is substantially balanced.

4,438,984

DRILL STEEL GUIDING AND CENTRALIZING MECHANISM

Matti Leppälä, Teräksentie, 33960 Pirkkala 6, Finland

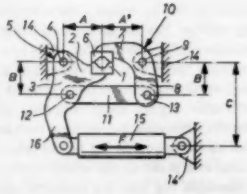
PCT No. PCT/FI81/00045, § 371 Date Feb. 12, 1982, § 102(e) Date Feb. 12, 1982, PCT Pub. No. WO82/00171, PCT Pub. Date Jan. 21, 1982

PCT Filed Jun. 12, 1981, Ser. No. 349,086

Claims priority, application Finland, Jul. 2, 1980, 802116

Int. Cl.³ B23Q *3/06;* B25B *1/08, 21/00;* E21B *19/20*

U.S. Cl. 308—3.9 **3 Claims**



1. A drill steel guiding and centralizing mechanism comprising a body (**14**), a first jaw (**1**), a first lever arm (**2**) directly

connected by said first jaw, a second lever arm (3) directly connected to the first lever arm away from the connection of the first jaw with the first lever, and an extension (16) for the second lever arm, a first swivel joint (4) connected between the first and the second lever arms and the body (14), around which joint the first angled lever (5) formed by the first and the second lever arms turns, and another jaw (6), cooperating with the first jaw in order to open and close the jaws, a third lever arm (7) directly connected to the second jaw, and a fourth lever arm (8) directly connected to the third lever arm away from the connection of the second jaw with the third lever arm, the body (14) between the third and the fourth lever arms, on which second joint (9) the angled lever (10) formed by the third and the fourth lever arms is swiveling, whereby the second lever arm (3) and the fourth lever arm (8) are on the same side in relation to the first and the second joints, and a power mechanism (15) to move the arms, the center of the jaws (1, 6) being positioned on a line connecting the joints (4, 9) when in a closed position of the jaws and that the jaws are movable away from and towards the line when the jaws are opened and closed, the improvement being that the second and fourth lever arms are connected through a firm connecting rod (11) that is connected to the second lever arm (3) by a third joint (12) and to the fourth lever arm (3) by a fourth joint (13) and that the power mechanism (15) to drive the arms being coupled to affect only one of the lever arms (2, 3, 7 or 8) or its extension, or the connecting rod (11) between the second (3) and fourth (8) lever arms, and the first (4), the second (9), the third (12) and the fourth (13) joints being corner points of a parallelogram.

4,438,985

BALL BUSHING OF SIMPLIFIED CONSTRUCTION

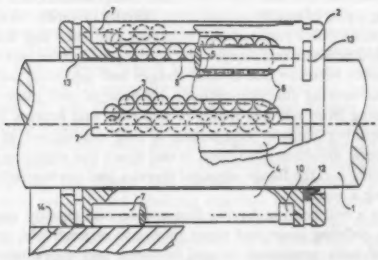
Denis Borel, Wallisellen, Switzerland, assignor to SRO Kugellagerwerke J. Schmid-Roost AG, Switzerland

Filed Oct. 26, 1982, Ser. No. 436,657

Claims priority, application Switzerland, Nov. 3, 1981, 7006/81

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **14 Claims**



1. A ball bushing, comprising:

a hollow cylindrical sleeve with an exterior surface and an interior surface; at least one recess in the sleeve extending from the exterior surface to the interior surface for defining a ball channel; the ball channel defined in the recess being comprised of two longitudinal sections extending generally along the axis of the sleeve and of two curved sections joining the ends of the longitudinal sections, thereby forming a complete ball raceway in the longitudinal and curved sections of the ball channel; the longitudinal and curved sections all being shaped for guiding movement of balls therealong; a plurality of balls disposed in the ball channel for movement therealong;

a circular cross-section needle positioned in the recess and extending the length of the ball channel, and located radially outside one of the longitudinal sections of the ball channel, the needle having a center and being defined by a circular periphery; the needle being longer than the ball channel; the balls in the longitudinal sections of the ball channel being guided along the periphery of the needle, and in the curved sections of the ball channel, which partially wrap about the circular periphery of the needle, the balls being guided around the periphery of the needle, the curved sections being concavely curved around the needle;

the needle and the longitudinal sections of the ball channel being so shaped and so positioned that the centers of the balls in the longitudinal and in the curved sections of the ball channel are approximately the same distance from the center of the needle, the axes of the longitudinal sections of the ball channel continuously are approximately the same distance from the axis of the needle, and the balls and the needle being sized so that all balls in all sections of the ball channel are always in contact with the needle for being guided thereby and for being held in the ball channel.

4,438,986

BALL SCREW ASSEMBLY CONTAINING A BALL SPLINE UNIT FOR EXACT SLOW FEED AND POWER TRANSMISSION MECHANISM COMPRISING SAID BALL SCREW ASSEMBLY

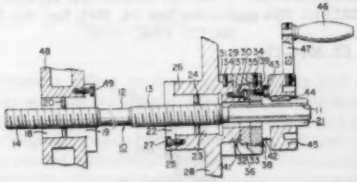
Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo, Japan (158)

Filed Feb. 8, 1982, Ser. No. 346,692

Claims priority, application Japan, Mar. 13, 1981, 56-35418; Oct. 5, 1981, 56-157454

Int. Cl.³ F16C *31/04, 29/10*; F16H *92/20, 1/20*

U.S. Cl. 308—6 R **3 Claims**



1. A power transmission mechanism for exact and slow feed with a ball screw assembly containing a ball spline unit (21), said ball screw assembly comprising: a shaft (10) consisting of two parts, one of the two parts being formed as a spline (11) and the other one containing at least two screws (13, 14), spaced apart from one another at a predetermined distance, wherein the respective screws having a different pitch are in screw engagement with a corresponding ball screw nut (22, 18), and the ball spline unit (21) is fitted into the spline (11), said mechanism being characterized in that the ball screw nuts consist of a stationary ball screw nut (22) and a movable ball screw nut (18), said stationary ball screw nut (22) being held in a housing, said housing having a front and rear end part, said spline (11) being in said rear end part, and said movable ball screw nut (18) being secured to a movable member, the ball spline unit (21) being rotatably arranged at the rear end part of the housing with a ring member (33) disposed on the spline, and, a rotational driving member (46) is operatively connected to the ball spline unit, said ball spline (21) being fitted onto said shaft (10) with balls (50) interposed therebetween.

4,438,987

MAGNETIC BEARING SYSTEM

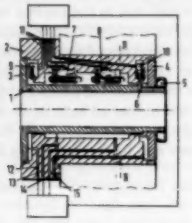
Hendrikus J. Kapaan, Ijsselstein, Netherlands, assignor to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Mar. 5, 1979, Ser. No. 17,111

Claims priority, application Netherlands, Mar. 8, 1978, 7802553

Int. Cl.³ F16C 39/00

U.S. Cl. 308—10 11 Claims



1. A magnetic bearing system comprising a first bearing member, a second bearing member movable relative to said first member, and adjusting means for maintaining a distance between said first and second members substantially constant, said adjusting means including means for transmitting light from one of said members to a surface of the other of said members, means for receiving a portion of said light reflected by said surface, and electromagnetic means electrically connected to said receiving means for exerting an electromagnetic force between said members variable as a function of the magnitude of the light received by said receiving means, at least one of said transmitting means and receiving means including a light conducting optical fiber.

4,438,988

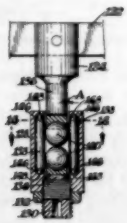
VERTICAL BEARING ASSEMBLY

Frank Santora, 2301 N. Grant Ave., Wilmington, Del. 19806

Continuation-in-part of Ser. No. 188,616, Sep. 19, 1980, Pat. No. 4,357,015. This application Sep. 14, 1981, Ser. No. 301,987

Int. Cl.³ F16C 19/49

U.S. Cl. 308—174 3 Claims



1. A low friction, vertical bearing assembly comprising:

(a) an upper, substantially vertical load-bearing shaft extending into

(b) a bearing housing containing two ball bearings, one ball bearing being oriented above and in contact with the other in said housing, said upper shaft having a lower, concave end resting upon the top of said upper ball bearing, the concave end being substantially of the contour of said ball bearing, said lower ball bearing resting upon

(c) a lower, substantially vertical load-bearing shaft which has a concave upper end, the concave end being substantially of the contour of said lower ball bearing, and

(d) a plurality of needle bearings contained within said housing and oriented substantially vertically around the periphery of said ball bearings and in contact therewith,

whereby a bearing assembly is provided having extremely low rotational friction.

4,438,989

BALL BEARING

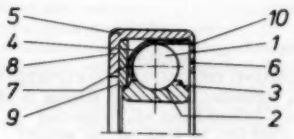
Richard Negele, Esslingen, and Wilhelm Birkenmaier, Weinstadt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,648

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 7816941[U]

Int. Cl.³ F16C 19/16, 27/04, 33/78

U.S. Cl. 308—184 R 10 Claims



1. In a ball bearing having first and second radially spaced means defining inner and outer raceways respectively, and a row of balls positioned to roll between said raceways; the improvement wherein said first means comprises an outer shell having a pair of axially spaced apart radially inwardly directed flanges, an outer ring radially engaging said shell and axially confined between said flanges and defining said outer raceway, and space between one of said flanges and said ring, and an annular bearing function-defining element in said space and extending from said one flange to said ring, said bearing function-defining element comprising a ring corrugated in the peripheral direction positioned in said space and engaging said outer ring and the flange adjacent thereto, said corrugated ring forming a spring.

2. In a ball bearing having first and second radially spaced means defining inner and outer raceways respectively, and a row of balls positioned to roll between said raceways; the improvement wherein said first means comprises an outer shell having a pair of axially spaced apart radially inwardly directed flanges, an outer ring radially engaging said shell and axially confined between said flanges and defining said outer raceway, and space between one of said flanges and said ring, and an annular bearing function-defining element in said space and extending from said one flange to said ring, the other of said flanges having a reduced thickness.

5. A ball bearing having inner and outer raceways, a row of balls positioned to roll between said raceways, one of said raceways comprising a ring having an arcuate cross-section, with a first axially extending side and a second side extending radially toward the other raceway, an annular shell having a central portion radially engaging said ring and having first and second side flanges axially confining said ring, and annular means extending axially between said first flange and said radially extending side of said ring.

4,438,990

SEALING ASSEMBLY FOR A ROLLING BEARING

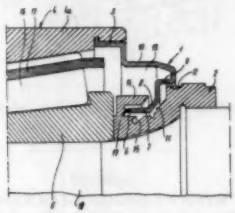
Bartje Schalk, Zeist; Claudio Operti, Nieuwegein, and Johan C. Bras, Buurmaisen, all of Netherlands, assignors to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed Dec. 2, 1982, Ser. No. 446,397

Claims priority, application Netherlands, Dec. 17, 1981, 8105701

Int. Cl.³ F16C 33/76; F16J 15/447

U.S. Cl. 308—187.1 4 Claims



1. Seal assembly for a rolling bearing assembly having an inner race ring (5) adapted to be mounted on a shaft member (18) and an outer race ring (4) radially spaced from the inner race ring (5) defining an annular space for rolling elements (16) comprising a contoured sealing ring (1) connected to the outer race ring (4) cooperatively associated with a closure member (2) mounted on the shaft member adjacent one axial end of said inner race ring (5) to seal the annular space at least at one axial end of the rolling bearing assembly, said sealing ring (1) having an outer portion (3) connected to the outer race ring (4) inner and outer axially directed annular wall portions (7, 10) connected by an intermediate wall portion (8) and spaced apart radially to define an enlarged chamber overlying and spaced radially outwardly of said closure member (2) annular lubricant chamber (13), said closure member comprising an annular body portion (2a) and an axially outwardly directed flange portion (14) spaced radially from the body portion (2a) and defining a pocket (6) within which the terminal portion of the inner annular wall portion (7) extends, the inner annular wall portion (7) being contoured to complement the contoured face of the body portion which has angularly disposed wall segments (11 and 12) generally parallel to and spaced from wall portions (8) and (9) of the sealing ring and closely spaced therefrom to define a serpentine labyrinthian passage having an inlet and communicating with the chamber (13) disposed radially inwardly of an outlet and communicating with the ambient atmosphere, the flange (14) defining the innermost axially extending wall of said lubricant chamber (13) whereby upon relative rotation of said inner and outer race rings and said sealing ring (1) and closure member (2) a centrifugal force is exerted on lubricant in said chamber (13) urging the lubricant radially outwardly away from said labyrinthian passage thereby minimizing escape of lubricant therethrough and means defining an annular groove (15) in the innermost wall of said body portion defining said pocket (6) serving as an auxiliary lubricant reservoir.

4,438,991

BEARING HOUSING

Bengt Lundgren, Lerum, Sweden, assignor to SKF Nova AB, Sweden

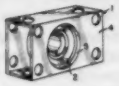
Filed Nov. 3, 1982, Ser. No. 438,913

Claims priority, application Sweden, Jan. 14, 1982, 8200173

Int. Cl.³ F16C 35/077

U.S. Cl. 308—189 R 7 Claims

1. Bearing housing (1) for supporting a bearing (2) in a bearing seat arranged in the housing, characterized by that the housing has the shape of a tube with a mainly rectangular cross section, whereby, when a bearing is arranged in the housing, the bearing axis (3) extends mainly perpendicular to two hous-



ing walls (4) facing each other and the bearing is enclosed by the housing.

4,438,992

TWO-PIECE ROLLING BEARING CAGE

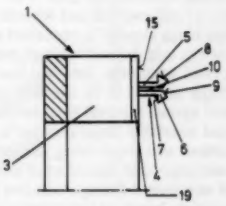
Armin Olschewski; Klaus Kispert, both of Schweinfurt, and Hans Meining, Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 1, 1981, Ser. No. 268,884

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 8016523[U]

Int. Cl.³ F10C 33/38, 33/46

U.S. Cl. 308—201 4 Claims



1. A two-piece rolling bearing cage comprising first and second cage sections, at least one of said cage sections having a plurality of cage bridges terminating in a snap pin, said snap pin comprising an elongated split shaft and an enlarged split protruding tapered conical head, the other of said cage sections having a plurality of recesses each for accommodating a separate said snap pin, said recesses each having a diameter to permit passage of said head when compressed through said split, said conical head having a conical end recess, and a conical projection in each other cage section recess and engaging an end recess of a respective pin to hold the elongated shaft of said pin against the respective elongated passage while holding said enlarged head against a contact surface of said enlarged end of the respective other cage section recess, for holding said cage sections together axially and radially.

4,438,993

DISPLAY CASE INCLUDING IMPROVED HINGE CONNECTION ARRANGEMENT

Kenneth J. Rabas, Waukesha, Wis., assignor to DCI Marketing, Milwaukee, Wis.

Filed Jan. 4, 1982, Ser. No. 336,775

Int. Cl.³ F16B 12/02; A47F 3/00

U.S. Cl. 312—140 7 Claims

1. A display case comprising

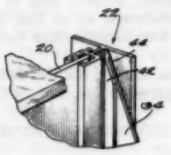
a plurality of shelves for displaying merchandise,

a pair of vertical end walls supporting said shelves, said end walls each including a rearward edge, a rear wall having vertical edges, and

means for pivotally and releasably joining at least one vertical edge of said rear wall to said rearward edge of one of said end walls, said means for joining including

a first hinge member including a supporting surface and a restraining member spaced from said supporting surface in opposed relation thereto, said restraining member projecting toward said supporting surface and including a rodlike bearing surface facing said supporting surface, said rodlike bearing surface and said supporting surface defining a socket therebetween,

an insertable hinge member having one elongated vertical edge secured to said edge of said rear wall, said insertable hinge member being adapted to be positionable in a first angular position wherein said rear wall is positioned at an acute angle with respect to said end wall and wherein at least a portion of said insertable hinge member is slideably insertable into said socket and slideably removable from said socket and adapted to be positionable in a second



angular position wherein said rear wall is substantially perpendicular to said end wall and wherein said portion of said insertable hinge member is restrained against removal from said socket, said insertable hinge member including an edge portion insertable into said socket when said insertable hinge member is in said first angular position and restrained against removal from said first hinge member when said insertable hinge member is in said second angular position, said edge being curved about an axis parallel to said edge, said curved edge including opposite sides, one of said sides defining a concave curved bearing surface adapted to house said restraining member and to pivot on said restraining member as said insertable hinge member moves from said first angular position to said second angular position, and the other side defining a convex curved surface at least a portion of which is adapted to face said supporting surface, and

a channel integrally joined to said socket portion, said channel defining an elongated slot slideably receiving said rearward edge of said end wall and supporting said end wall in substantially perpendicular relation to said rear wall.

4,438,994

DRAWERS AND DRAWER RUNNERS

Harry H. Davis, Mooresville, N.C., assignor to L. B. (Plastics) Limited, Belper, England

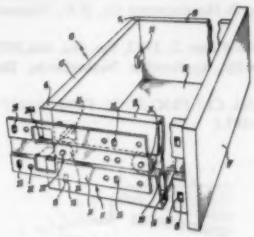
Filed Feb. 18, 1981, Ser. No. 235,392

Claims priority, application United Kingdom, Feb. 23, 1980, 8006181; Oct. 3, 1980, 8031926

Int. Cl.³ A47B *88/00*; F16C *21/00*

U.S. Cl. 312—330 R **14 Claims**

1. A drawer runner comprising a mounting member adapted to be mounted in a cabinet in which a drawer is to be supported in use, a pair of spaced bearing members in the form of rollers rotatably mounted on studs carried by said mounting member for engagement in a runner recess in the drawer side, and a fixed load-supporting flange mounted on and extending at right angles to said mounting member in a position rearwardly of said bearing member, said flange being adapted to assist by contacting the runner recess of said drawer in supporting the



weight of the drawer when the drawer is laden and in its closed position.

4,438,995

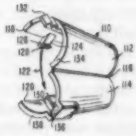
HOUSING WITH FRANGIBLE LOCKING ELEMENTS

Richard W. Fisher, Rahway, N.J., and Frank A. Cristell, 205 E. Inman Ave., Rahway, N.J. 07065, assignors to Frank A. Cristell, Colonia, N.J.

Filed Jul. 27, 1981, Ser. No. 287,426

Int. Cl.³ H01R *13/52*

U.S. Cl. 339—39 **10 Claims**



1. A frangible housing, said housing defining side walls, said side walls being intermediate one end and another end of said housing, said one and said other end of said housing each carrying openings, said openings residing in a pair of planes extending parallel to one another, at least one tongue-like element, said at least one tongue-like element having one end thereof secured to said housing, the other end of said at least one tongue-like element carrying at least one clamping-like surface thereon, means to non-releasably lockingly clampingly engage said at least one clamping surface to a seating surface carried on another structure, whereby said housing is attachably securable to said other structure when said at least one clamping surface is in touching seating engagement with said seating surface, said at least one tongue having a longitudinal axis, said longitudinal axis extending normal to one of said planes, wherein adjacent portions of said side walls are joined together by a hinge, and wherein other portions of said side walls are separable from one another along a parting line disposed intermediate said one end and said other end of said housing, whereby at least one of said portions of said housing carries one of the said at least one tongue, said longitudinal axis extending parallel to the axis of said parting line, a side acting tongue, said side acting tongue being secured to one of said at least one of said portions of said side walls and extending substantially tangentially to said longitudinal axis, at least one side acting seating surface being configured in another of said at least one of said portions of said side walls, means to clampingly non-releasably lockingly engage a clamping surface of said at least one side acting tongue to said at least one side acting seating surface of said another portion of said side walls, whereby said housing defines a cavity disposed intermediate its side walls and said one end and said another end of said housing.

4,438,996

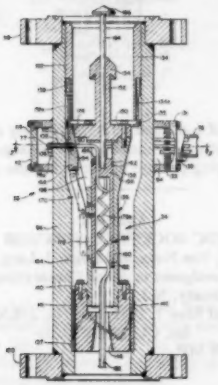
APPARATUS FOR USE IN ENERGIZING SUBMERGIBLE PUMPING EQUIPMENT IN UNDERWATER WELLS

James N. Zehren, Bartlesville, Okla., assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 222,540, Jan. 5, 1981, abandoned. This application Oct. 30, 1981, Ser. No. 316,743

Int. Cl.³ H01R *13/453*

U.S. Cl. 339—40 **9 Claims**



1. Apparatus for energizing submergible pumping equipment in a well comprising a suspension head from which the equipment is adapted to be suspended and a casing adapted to be associated with wellhead apparatus for receiving the suspension head, the suspension head and casing having cooperable means for seating the head in the casing, the casing carrying at least one element for establishing electrical connection between an external power source and a supply cable for the equipment carried by the suspension head, the suspension head being inserted into the casing by motion along a line parallel to the casing longitudinal axis to a position past the said one element, the casing further including a sliding door for covering said element and the suspension head having a ramp and including means for sliding the door to a position exposing said element when the head is seated in the casing, with the sliding motion of said door being along a line substantially parallel to said casing longitudinal axis, said means for sliding including at least one radially expandable slip carried by the suspension head for axial movement along said ramp, said slip being positioned to engage said door and to move the door to expose said element during radially expanding movement of the slip along said ramp.

4,438,997

PIVOTING ELECTRICAL CONTACT

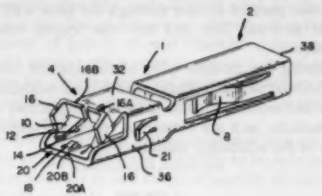
William R. Evans, Clemons, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 136,852, Apr. 3, 1980. This application Jul. 30, 1981, Ser. No. 288,618

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—97 R **6 Claims**

1. A stamped and formed electrical contact for connection to an electrical conductor comprises a plate portion, a notch communicating with a free end of the plate portion, opposite sides of the notch define insulation penetrating and conductor engaging jaws constructed for straddling and penetrating a conductor to establish an electrical connection, characterized in that; a conductor receiving receptacle is connected adjacent to the plate portion, the receptacle has sidewalls and an open end so as to provide an internal cavity for receipt of the conductor within the receptacle, the plate portion is pivotal toward the cavity of the receptacle, and into electrical connection with the conductor, and tabs on the receptacle lock the plate portion transversely of the cavity of the receptacle with the jaws penetrating the conductor, said plate portion further



having flaps projecting therefrom for pressing against the conductor when the plate portion projects transversely of the cavity and the jaws penetrate the conductor.

4,438,998

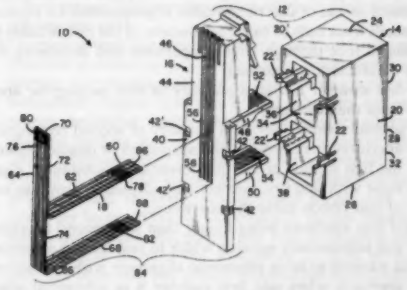
MODULAR PLUG-DIAL MODULAR JACK ADAPTOR

Ronald W. Myers, Landisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 354,974, Mar. 5, 1982. This application May 14, 1982, Ser. No. 378,301

Int. Cl.³ H01R *13/518*

U.S. Cl. 339—154 A **10 Claims**



1. A modular plug-dual modular jack adaptor of the type comprising a first modular plug and first and second modular jacks, the modular jacks having plug-receiving faces which lie in a common plane and having backwalls which lie in a common plane which is substantially parallel to, and spaced from, the common plane of the plug-receiving faces, the modular plug extending in the common plane of the backwalls of the modular jacks, a plurality of conductors, each conductor having a first jack contact portion in the first modular jack, a first connecting portion extending from the first modular jack to the modular plug and having an intermediate portion in the modular plug, the intermediate portion being reversely bent upon itself and forming a plug contact in the modular plug, a second connecting portion extending from the intermediate portion to the second modular jack, and a second jack contact portion in the second modular jack, the adaptor being characterized in that:

the first and second modular jacks are side-by-side with the corresponding first and second jack contacts in the first and second modular jacks lying in the same plane,

each of the conductors is a continuous one-piece uninsulated conductive member, the intermediate portion comprising first and second parallel sections in the modular plug which extend from the reverse bend to the rearward end of the modular plug,

the first connecting portion extending normally from the

first parallel section through the back wall of the first modular jack and into the first modular jack,

the second connecting portion extending normally from the second parallel section through the back wall of the second modular jack and into the second modular jack whereby,

upon mating the modular plug of the adaptor with an additional modular jack and plugging additional modular plugs into the first and second modular jacks, the conductors in the additional modular jack are connected to the corresponding conductors in the additional modular plugs.

4,438,999

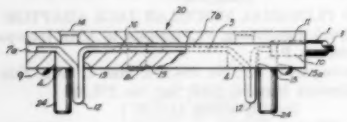
WIRE PIN CONNECTOR FOR RIBBON CABLE

Donald D. Lang, Garden Grove, Calif., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 2, 1979, Ser. No. 63,282

Int. Cl.³ H01R *13/00*

U.S. Cl. 339—176 MF **11 Claims**



1. A wire pin connector kit for ribbon cable for clampingly retaining an end of said ribbon cable in preparation for forming terminals from ends of bared conductors of the ribbon cable by passing a tool through aligned apertures and deforming the bare conductors, comprising:

a first member having a plurality of first rectangular apertures therethrough;

a second member having a plurality of second rectangular apertures therethrough, and adapted to be retained against the first surface of said first member in substantial alignment with said first member and adapted to clamp an end of said ribbon cable therebetween;

said first apertures being longer than said second apertures and substantially equal in width to said second apertures;

and adapted to be in substantial alignment with said second apertures when said first member is in substantial alignment with said second member;

said first member including a plurality of grooves on said first surface adapted to retain the bared ribbon cable conductors in alignment with said first apertures and said second apertures;

a first surface of said second member including a plurality of studs protruding therefrom adapted to be pressed through and to protrude from said first member; and

said first member including a plurality of third apertures adapted to receive said studs therethrough.

4,439,000

SURFACE MOUNT/DAUGHTER BOARD CONNECTOR

John W. Kaufman, Hershey; William J. Stape, Lewisberry, and Patrick F. Yeager, Middletown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

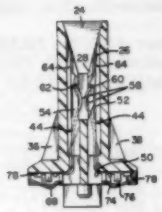
Filed Mar. 31, 1982, Ser. No. 364,166

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—176 MP **1 Claim**

1. A surface mount connector for electrically interconnecting circuits on a daughter card and mother board, comprising:

a. an inverted T-shaped housing having a card receiving cavity along the top surface thereof and laterally extending surfaces along each side adjacent the bottom surface, terminal receiving passages opening into the cavity along either side thereof, and further terminal receiving channels extending along the bottom of the laterally extending surfaces normal to the cavity and in registration with the passages; and



b. a plurality of L-shaped terminals having a daughter card engaging portion positioned in the passages and a mother board engaging portion positioned in the channels.

4,439,001

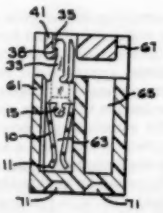
IDC SOCKET CONNECTOR

James H. Curley, Van Nuys, and Roger J. Lang, Garden Grove, both of Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 7, 1982, Ser. No. 375,921

Int. Cl.³ H01R *13/50*

U.S. Cl. 339—176 MP **13 Claims**



1. A multi-socket connection device for forming an electrical connection with a plurality of first wires of an insulated planar cable and a plurality of second wires for electrical connection to each first wire, comprising:

a first body,

a second body,

said first body defining a plurality of sockets,

each said socket having a first opening onto a first side of said first body and a second opening onto a second side of said first body,

a connector mounted in each said socket and having a first end at said first opening for receiving one said second wire and forming an electrical contact at a second end at said second opening for engagement with a respective one of said insulated wires, said second end of said connector having a latching means to engage a holding means on said second body,

said second end having a positioning means for locating said insulated wire on said connector and an insulation displacing means for forming an electrical contact with said insulated wire,

said second body having means for engaging said insulated wire and displacing said insulated wire from said positioning means to said insulation displacing means responsive to said second body being driven towards said first body, and

where the improvement comprises said connector having a stabilizing means perpendicularly separating said connector latching and insulation displacing means to prevent displacement of said insulation displacement means re-

sponsive to the engagement of said latching means by said second body, said latching means being disposed perpendicular to said insulation displacing means.

4,439,002

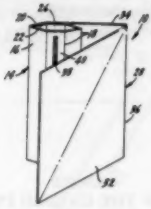
ONE-PIECE FOLDABLE KALEIDOSCOPE KIT

Lyman J. Brown, Oak Brook, Ill., assignor to Bates Printing Specialties, Inc., Cicero, Ill.

Filed Aug. 16, 1982, Ser. No. 408,513

Int. Cl.³ G02B *23/00*

U.S. Cl. 350—4.1 5 Claims



1. A one-piece kaleidoscope kit in the form of a multi-layered prefolded packet having a first section and second section joined by a fold line, a portion of the second section being divided into a plurality of strips beginning at the end of the second section distal from the fold line,

the most distant strip being folded and adhered to the strip closest to the fold line to form a flattened multi-panel tube,

the tube being folded flat between the first and second sections to form the packet,

a perforated tear line formed in the second section to separate the plurality of strips from the remainder of the second section,

a reflective surface formed on corresponding sides of the plurality of strips which form the interior of the folded flattened tube, and

means connecting the first panel to one of the strips of the tube to form the prefolded packet.

4,439,003

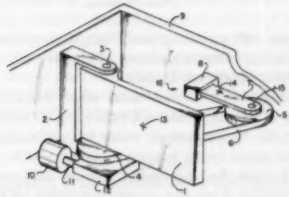
REMOTE COUNTER-BALANCING MECHANISM

Ronald B. Roth, Boxboro, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 10, 1981, Ser. No. 291,538

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.6 13 Claims



1. A system comprising:

A. a mechanical assembly having a single pivot point;

B. a counterweight assembly;

C. means for rotating said mechanical assembly about said single pivot point; and

D. means for mechanically linking said counterweight assembly and said mechanical assembly, said means for linking comprising

(i) means for enabling the pivoting of said counterweight assembly about another pivot point,

(ii) wherein a line through the center of gravity of said mechanical assembly and through said single pivot point is a first line of action and wherein a line through the center of gravity of said counterweight assembly and said another pivot point is a second line of action,

(iii) means for enabling said first and second lines of action to be substantially parallel as said mechanical assembly is rotated, and

(iv) means for enabling a torque created at said center of gravity of said mechanical assembly to be substantially equal to a torque at said center of gravity of said counterweight assembly.

4,439,004

OPTICAL WAVEGUIDE AND MODULATOR AND PROCESS FOR FABRICATING SAME

Robert G. Hunsperger, and Gordon A. Shifrin, both of Malibu, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 778,288, Mar. 16, 1977, abandoned, which is a division of Ser. No. 345,625, Mar. 28, 1973, abandoned. This application Oct. 27, 1982, Ser. No. 437,079

Int. Cl.³ G02B *5/172*; G02F *1/015*

U.S. Cl. 350—96.12 10 Claims

1. An optical waveguide comprising:

(a) a substrate of semiconductive material having a bandgap energy sufficiently high so that it will sustain the propagation of chosen light wavelengths at relatively high guiding efficiencies; and

(b) a proton implanted region within said substrate and annealed to reduce and minimize optical absorption losses therein, said proton implanted region having a resistivity substantially higher than that of said substrate, and said proton implanted region and said underlying substrate material meeting at a common interface boundary adjacent a relatively sharp change in carrier concentration as a result of the high energy proton implantation dosage profile in said substrate, whereby said profile and the relatively large difference in refractive indices between said proton implanted region and said underlying substrate greatly enhance the reflectivity of light by said interface boundary and greatly enhance the light guiding efficiency in said proton implanted region.

4,439,005

BRANCHING ELEMENT FOR OPTICAL WAVEGUIDES

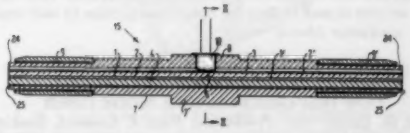
Gerhard Winzer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,695

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 2840602

Int. Cl.³ G02B *7/26*

U.S. Cl. 350—96.15 22 Claims



1. A branching device for branching a light component out of an optical waveguide extending on a common waveguide axis, said device comprising a pair of optical waveguides; each of the waveguides being received in a carrier member, each carrier member being a body having a substantially cylindrical shape; means for positioning the carrier members with the

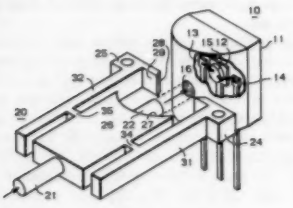
optical axis of each of the pair of waveguides being on the common waveguide axis and a gap between the end surfaces thereof; a beam divider means being disposed in the gap between the end surfaces of the waveguides and including a layer extending obliquely to the common waveguide axis for reflecting out a portion of the light transmitted by one of said waveguides as a light component on a path; and a photo detector, said means for positioning including a tubular member having an aperture for receiving and positioning the photo detector and a support carrier having a cylindrical shape and having a longitudinally extending groove receiving the pair of carrier members with the layer arranged to reflect the light component out of the groove, said support carrier being received in the tubular member with the groove and light waveguides being on the common axis and the path of the light component being directed at the photo detector, and said support carrier with the carrier members and the tubular member having approximately the same lengths so that the ends of the device are plane surfaces.

4,439,006

LOW COST ELECTRO-OPTICAL CONNECTOR

David W. Stevenson, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 18, 1981, Ser. No. 264,764
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **9 Claims**



1. A connector for coupling an optical fiber transmission line to the package of an electro-optical semiconductor device comprising:

a central body portion having a surface thereof complementary to the shape of said package;

a pair of arms positioned on either side of said central body portion and extending away from said surface to form a pincer-like enclosure for said package;

flexible coupling means interconnecting said central body portion and said arms so that said arms can move relative to said central body portion;

each arm having an end portion extending orthogonal to the arm and defining a shoulder portion for temporarily securing said connector to said package; and

wherein said central body comprises optical fiber extending at least to said surface for optical connection to said semiconductor device.

4,439,007

LOW DISPERSION SINGLE MODE FIBER

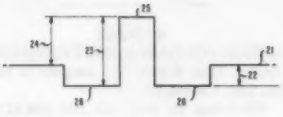
Paul D. Lazay, New Providence; Paul J. Lemaire, Basking Ridge, and Arthur D. Pearson, Bernardsville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 9, 1981, Ser. No. 271,957
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.30 **8 Claims**

1. A single mode fiber comprising

(a) an up-doped core of diameter less than 9 μm,

(b) a down-doped cladding with no abrupt change in index of refraction, and which contributes at least 20 percent of the fiber Δ,



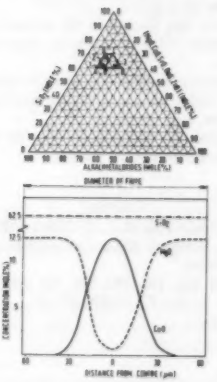
the Δ of the fiber being greater than 0.3 percent and less than 0.75 percent, the dispersion of the fiber being less than 5 psec/nm-km within the wavelength range of 1.25–1.385 μm, and the cutoff wavelength being less than 1.31 μm.

4,439,008

OPTICAL FIBER OF THE GRADED INDEX TYPE AND METHOD OF PRODUCING SAME

Hendrik J. M. Joormann, and Gijsbertus A. C. M. Spierings, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 14, 1982, Ser. No. 387,993
Claims priority, application Netherlands, Jun. 26, 1981, 8103089
Int. Cl.³ C03C *3/04, 3/10, 13/00;* G02B *5/14*
U.S. Cl. 350—96.31 **7 Claims**



1. A graded index glass optical fiber having an axis and a circumference, said fiber consisting essentially of:

60 to 70 mole % silicon dioxide;

15 to 30 mole % of two or more alkali metal oxides, the quantity of lithium oxide not exceeding 15 mole %; and

10 to 25 mole % magnesium oxide in combination with at least one metal oxide having a cation which can be exchanged with the magnesium cation, said metal oxide being selected from the group consisting of CaO, SrO, BaO, and ZnO, the quantity of CaO not exceeding 15 mole %;

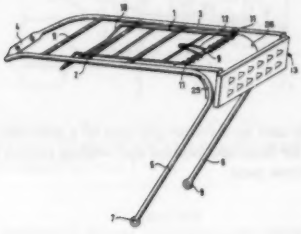
wherein the fiber is substantially free of boron contains less than 0.01 parts per million of impurities which absorb radiation having a wavelength up to 1500 nanometers; and

wherein the graded refractive index is caused by a decreasing exchangeable cation concentration and an increasing magnesium concentration in the fiber from the fiber axis to the fiber circumference.

4,439,009
BICYCLE LUGGAGE CARRIER AND REFLECTOR STRUCTURE COMBINATION

Heinz Niemann, Herford, Fed. Rep. of Germany, assignor to ESGE-Marby GmbH & Co., KG, Bielefeld, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,683
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 8108128[U]
Int. Cl.³ G02B 5/12
U.S. Cl. 350—99 **14 Claims**



1. For combination with a cycle luggage carrier, having a rectangular frame (1) including two longitudinal bars or rods (2, 3), cross connecting elements (9) cross connecting said longitudinal bars or rods, and support struts (5, 6) bent off from said bars or rods and forming a transition zone (25, 26) therewith, said support struts extending to the region of the wheel axle of the cycle for attachment to the frame of the cycle,

a reflector structure having

a reflector plate (13) and means for attachment of the reflector plate to the frame,

comprising, in accordance with the invention,

a pair of essentially plate-like engagement and holding elements (14) shaped to fit against the facing sides of the longitudinal bars or rods (2, 3) of the frame (1) and support struts (5, 6) in the region of the transition zone (25, 26) between the longitudinal bars or rods and the support struts;

a clamping element (15) formed on each of the engagement and holding elements (14) shaped to fit at least in part around the facing surfaces of the frame in the transition zone (25, 26);

a resiliently deformable connecting plate (16, 17*a*, 17*b*, 17', 18, 18', 19, 19') cross connecting said engagement and holding elements to permit resilient deformation thereof upon assembly to the frame of the carrier;

and wherein the reflector plate (13) is a stiff plate-like element fitting against at least a major portion of the connecting plate and includes attachment means (21, 22) for securing the reflector plate (13) against at least a major portion of the connecting plate and stiffening the connecting plate, upon attachment thereto, for preventing resilient deformation thereof after assembly of the engagement and holding element (14) with the clamping elements (15) thereon to the frame (1) of the carrier.

4,439,010
APPARATUS FOR COMBINING OPTICAL IMAGES

James L. Doty, Laguna Niguel, Calif., assignor to Spectron Development Laboratories, Inc., Costa Mesa, Calif.

Filed Apr. 1, 1982, Ser. No. 364,317
Int. Cl.³ G02B 27/10
U.S. Cl. 350—174 **8 Claims**

1. An apparatus for viewing selected portions of an object, comprising:

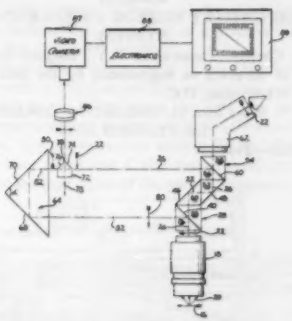
light gathering means for gathering and focusing light rays from said object;

a first light reflecting surface;

a second light reflecting surface oriented substantially 90 degrees with respect to said first light reflecting surface;

beamsplitting means for splitting said light rays into first and second object images, said first and second object images having different spatial orientations such that said second object image is inverted with respect to said first object image;

light directing means for selectively directing at least some portion of said first object image onto said first reflecting surface, and for directing at least some portion of said second object image onto said second reflecting surface,



such that said first and second object images reflected from said surfaces form a single resultant image;

positioning means for selectively positioning said first and second surfaces along an axis defined by the bisector of said 90 degree angle between said surfaces, such that only a desired portion of said first and second object images is directed onto said reflecting surfaces;

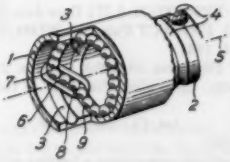
viewing means positioned above said first and second light reflecting surfaces for viewing said resultant image;

whereby selected portions of said object image are combined to form a single resultant image.

4,439,011
APPARATUS FOR FOCUSING AN OPTICAL SYSTEM

Herbert Machmerth, Solms, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,535
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049138
Int. Cl.³ G02B 7/04; F16H 53/08
U.S. Cl. 350—255 **7 Claims**



1. In a lens mount for focusing a photographic objective having an optical axis, a stationary tubular mount adapted to be attached to a camera body, a focusing adjustment ring rotatably supported on said mount, a lens barrel including at least parts of said photographic objective and arranged coaxially inside said mount and means for mechanically interconnecting said focusing adjustment ring and said lens barrel for displacing said barrel in the direction of said optical axis upon rotation of said focusing adjustment ring, the improvement comprising:

said focusing adjustment ring (1) and said lens barrel (2) each

having a guide groove (3, 4) helically winding around said optical axis (5), one of said focusing adjustment ring (1) and said lens barrel (2) having a return channel (6) connecting at least two consecutive turns of said guide groove (3) and said guide groove (4) bounded to a segment by the junctions (7, 8) of said return channel (6) and said return channel (6) being filled with a plurality of balls (9) having a given thickness for connecting said focusing adjustment ring (1) and said lens barrel (2) to be displaced with respect to each other only by means of said balls (9).

4,439,012

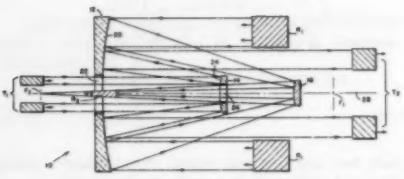
DUAL-SECONDARY MIRROR CASSEGRAIN OPTICAL SYSTEM

Orrin D. Christy, Tonawanda, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 11, 1982, Ser. No. 338,695

Int. Cl.³ G02B *23/02*

U.S. Cl. 350—294 **9 Claims**



1. An optical system for transmitting and receiving optical radiation comprising: first optics means for providing a first optical beam path; and second optics means for providing a second optical beam path spatially separated from and coaxial with said first optical beam path; said first optics means comprising a primary mirror and a secondary mirror, both of said mirrors having a central aperture and being aligned coaxially for providing a common optical system axis, said secondary mirror being movably positioned along said system axis for variably expanding and reflecting optical radiation toward said primary mirror, and said primary mirror being disposed for intercepting and redirecting optical radiation received from said secondary mirror.

4,439,013

MOTOR VEHICLE PROVIDED WITH AN ADDITIONAL MIRROR EMBRACING THE DEAD ANGLE

Bruno Hagn, Munich; Werner Neuhauser, Coburg, and Robert Wimmer, Oberlaufing, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP80/00120, § 371 Date Jun. 30, 1981, § 102(e) Date Jun. 30, 1981, PCT Pub. No. WO81/01269, PCT Pub. Date May 14, 1981

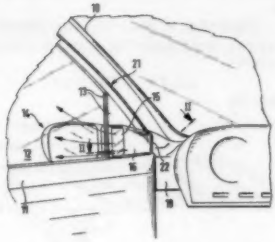
PCT Filed Oct. 29, 1980, Ser. No. 279,991

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1979, 2943941

Int. Cl.³ B60R *1/08*

U.S. Cl. 350—307 **1 Claim**

1. A motor vehicle comprising a heating and venting system having an air-outlet opening in the dashboard and a mirror arrangement having an additional mirror that includes the blind angle, said additional mirror being disposed in the front area of a side door adjacent to the inside of a side window pane for cooperation with an outside rear-view mirror disposed on the outside of the side door, said additional mirror being held in a separate housing disposed on a covering in the front area of the door, the housing is subdivided inside by a separating wall into a first chamber, receiving the additional mirror and a second chamber serving as an air-guiding duct, an elastic element connecting one end of the air-guiding duct to the air-outlet opening of the heating and venting system, the other end of the air-guiding duct is connected with an air-outflow gap formed between the additional mirror and the side window



pane whereby said air-outflow gap acts as a defroster nozzle for directing air from said heating and venting system to clear said side window pane.

4,439,014

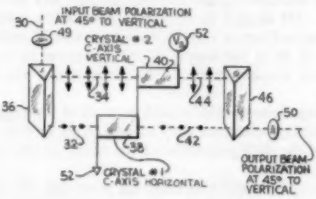
LOW VOLTAGE ELECTRO-OPTIC MODULATOR

Robert A. Stacy, St. Louis County, and Robert R. Rice, Florissant, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 13, 1981, Ser. No. 321,065

Int. Cl.³ G02F *1/03*

U.S. Cl. 350—388 **9 Claims**


INPUT BEAM POLARIZATION AT 45° TO VERTICAL
CRYSTAL # 2 C-AXIS VERTICAL
CRYSTAL # 1 C-AXIS HORIZONTAL
OUTPUT BEAM POLARIZATION AT 45° TO VERTICAL

1. An electro-optic modulator comprising:

means for delivering a coherent light beam to the input of the modulator;

means for splitting the input beam into two intermediate beams of substantially equal intensity, wherein a first intermediate beam has a linear polarization defined by a first vector, and a second intermediate beam has a linear polarization defined by a second vector which is substantially perpendicular to the first vector;

a first Pockels cell having A, B, and C crystal axes wherein the C axis of the cell is oriented parallel to the first polarization vector of the first intermediate beam which is transmitted through the cell as an E-wave;

a second Pockels cell having A, B, and C crystal axis wherein the C axis of the cell is oriented parallel to the second polarization vector of the second intermediate beam which is transmitted through the second cell as an E-wave;

a modulation means comprising a voltage source controlled in relation to a modulating signal such that the voltage source is operably connected across the crystal faces of each cell perpendicular to the C axis of each cell;

means for recombining the two intermediate beams into an output beam.

4,439,015

DISUBSTITUTED ETHANES

Roland Rich, Hesingue, France; Alois Villiger, Basel, and Erich Widmer, Münchenstein, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

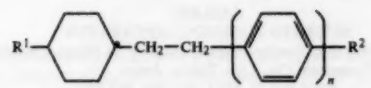
Filed Jan. 22, 1982, Ser. No. 341,926

Claims priority, application Switzerland, Jan. 30, 1981, 619/81; Oct. 13, 1981, 6545/81

Int. Cl.³ G02F *1/13*; C09K *3/34*

U.S. Cl. 350—350 R **20 Claims**

1. A compound of the formula



I

wherein R^2 is $-R^3$, $-OR^3$, $-CO-R^3$, $-CO-OR^3$ or $-O-CO-R^3$, R^1 and R^3 each are straight-chain alkyl of 1 to 12 carbon atoms and n is 1 or 2.

4,439,016

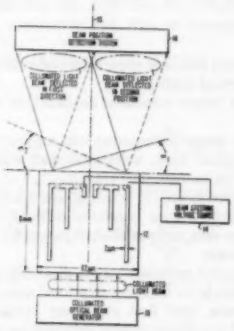
OPTICAL BEAM DEFLECTION SYSTEM

Jon W. Ogland, Millersville; Joe C. Bradley, Towson, and Dickron Mergerian, Baltimore, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 6, 1981, Ser. No. 319,154

Int. Cl.³ G02F *1/03*

U.S. Cl. 350—356 **4 Claims**



1. An optical beam deflector comprising:

(a) a first electrically conductive electrode;

(b) a layer of electro-optical material affixed to said first electrically conductive electrode;

(c) a second electrode comprising a pattern of stripes of electrically conductive material affixed to a second surface of said layer of electro-optical material, said strips being longer near opposed edges of said electro-optical layer and shorter near the center of said pattern of stripes.

4,439,017

ZOOM LENS

Shin Yamaguchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1981, Ser. No. 289,175

Claims priority, application Japan, Aug. 14, 1980, 55-112210

Int. Cl.³ G02B *9/64, 15/18*

U.S. Cl. 350—427 **2 Claims**

1. A compact zoom lens comprising, from front to rear:

a first lens group of positive refractive power having one negative lens and two positive lenses and being movable for focusing;

a second lens group having a negative refractive power;

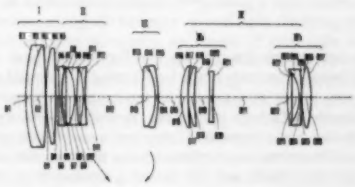
a third lens group of positive refractive power having one positive lens and one negative lens;

variation of image magnification being effected by the second and third lens groups; and

a fourth lens group of positive refractive power constituting an image forming section;

the first lens group having, from front to rear, a positive lens consisting of a negative lens and a positive lens cemented together, and a positive lens, the second lens group having, from front to rear, a negative lens, a negative lens consisting of a positive lens and a negative lens cemented together, and a negative lens, and the third lens group having a positive lens consisting of a positive lens and a negative lens cemented together,

letting ν_{23} denote the average value of the Abbe numbers of the two positive lenses in the first lens group, ν_1 the Abbe number of the negative lens in the first lens group, the partial dispersion ratio $\theta=(ng-nd)/(nF-nC)$ where ng, nF, nd and nC are the refractive indices for the Fraunhofer g-line, F-line, d-line and C-line respectively, letting θ_{23} denote the average value of the partial dispersion ratios of



the two positive lenses in the first lens group, θ the partial dispersion ratio of the negative lens in the first lens group, and letting $\nu 8$, $\nu 9$, $\theta 8$ and $\theta 9$ be the Abbe numbers and partial dispersion ratios of the positive and negative lenses in the third lens group respectively,

and letting f2 represent the focal length of the second lens group, fw the shortest focal length of the zoom lens system, n4, n6 and n7 the refractive incides for the spectral d line of the first to the third of the three negative lenses in the second lens group counting from the front respectively, so that when the second lens group is moved axially and at the same time the third lens group is moved so as to describe a path concave toward the front to effect zooming,

then the relations

$72<\nu_{23}\leqq 95.1$

$1\times10^{-3}<(\theta_1-\theta_{23})/(\nu_{23}-\nu_1)<2\times10^{-3}$

$0.9\times10^{-3}<(\theta_9-\theta_8)/(\nu_8-\nu_9)<2.3\times10^{-3}$

$-0.45fw<f_2<-0.36fw$

$1.68<n_4<1.883$

$1.68<n_6<1.883$

$1.68<n_7<1.883$

are satisfied.

4,439,018

ZOOM LENS STRUCTURE

Hidekazu Okajima, Tokyo, and Sadahiko Tsuji, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Aug. 7, 1981, Ser. No. 291,036

Claims priority, application Japan, Aug. 22, 1980, 55-115417

Int. Cl.³ G02B *7/10, 15/18*

U.S. Cl. 350—430 **5 Claims**

1. A zoom lens structure comprising:

zoom optics forming an optical axis and including a focusing optical element, a variation optical element and an image forming optical element;

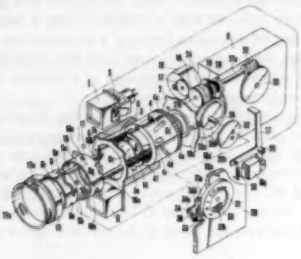
cam means for moving the focusing optical element along the optical axis for focusing the optics;

zooming operation means for displacing the variation optical

element along the direction of the optical axis for focal length adjustment of the optics;

means for operatively engaging the zoom operation means with the focusing optical element; and

compensation means for displacing the focusing optical element so as to compensate for focusing the optics when the focusing optical means in operative engagement with the zooming operation means is rotated relative to the cam means;



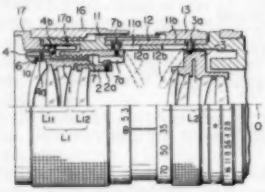
the cam means for moving the focusing optical element forming a first cam range for focusing in a normal photography range and a second cam range for focusing in a macrophotograph range, the zooming operating means having a predetermined variation operation range and a predetermined macrophotography position, the variation optical element and the focusing optical element being connected to each other only at the macrophotography position so as to be displaced along the optical axis in the second cam range of the cam means for macrophotography.

4,439,019

ZOOM LENS BARREL WITH SINGLE-RING CONTINUOUS FOCUSING

Takeshi Muryoi, Chigasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,182
Claims priority, application Japan, Oct. 11, 1980, 55-1442265
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—430 **4 Claims**



1. A zoom lens barrel comprising:

(a) an optical system including forward lens means and rearward lens means, said forward lens means comprising first lens means and second lens means;

(b) first means for driving said forward lens means in the direction of the optical axis for focusing, said first means including an operating member, a first holding member holding said first lens means and movable in the direction of the optical axis in response to said operating member, a second holding member holding said second lens means and movable in the direction of the optical axis, and means responsive to movement of said first holding member to move said second holding member while varying the spacing between said first lens means and said second lens means; and

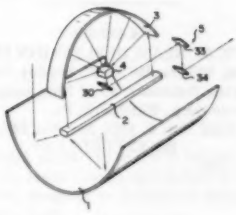
(c) second means for driving said forward lens means and said rearward lens means in the direction of the optical axis for zooming, said second means including another operating member, a third holding member holding said rearward lens means, means responsive to said another operating member to move said first holding member and said second holding member together with each other, and means responsive to said another operating member to move said third holding member.

4,439,020

SUNRAYS FOCUSING APPARATUS

Saburo Maruko, Yamato, Japan, assignor to Nihon Chemical Plant Consultant Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1982, Ser. No. 347,338
Claims priority, application Japan, Feb. 13, 1981, 56-18927
Int. Cl.³ G02B *17/18*
U.S. Cl. 350—443 **5 Claims**



1. A sunrays focusing apparatus, comprising in combination:

a first vertical shaft;

a support frame rotatably mounted on said first vertical shaft;

first drive means for rotating said support frame around said first vertical shaft; horizontal shaft means rotatably supported on said support frame;

second drive means for rotating said horizontal shaft means;

a first trough-shaped parabolic reflector means fixedly secured to said horizontal shaft means for reflecting incoming sunrays;

first elongated refractor means mounted to said first reflector means at or adjacent to a focal axis of said first reflector means, said first elongated refractor means being adapted to refract sunrays reflected by said first parabolic reflector means into parallel sunrays;

second trough-shaped parabolic reflector means mounted to said first parabolic reflector means in such a way that focal axes of both said first and second parabolic reflector means are disposed at right angles to each other;

second refractor means mounted to said first parabolic reflector means at or adjacent to the focal axis of said second parabolic reflector means for refracting sunrays reflected by said second parabolic reflector means into highly condensed parallel sunrays; and sun tracking means responsive to sunrays for directing said first parabolic reflector means to the sun by controlling said first and second drive means.

4,439,021

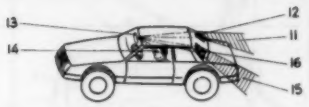
MOTOR VEHICLE REAR VIEWING SYSTEM

Leo Gross, 3611 217 St., Bayside, N.Y. 11361

Filed Jun. 8, 1981, Ser. No. 271,610
Int. Cl.³ G02B *3/08*
U.S. Cl. 350—452 **5 Claims**

1. In an improved optical system for directing an image from blind spots at the rear of a vehicle to the operator's view, the improvement comprising in combination with a rear window

of said vehicle a laminated integral Fresnel window assembly having a plurality of Fresnel prism elements mounted integrally with the refracting edge of each said prism elements oriented vertically between laminate layers of said window of said vehicle so as to compensate for the slope of a markedly sloping rear window; wherein the power and orientation of



said prism elements are selected to fit the window location and the direction of each said prism element is tilted and oriented to optimize the view of the blind spots to a vehicle operator when used in conjunction with a centrally mounted rear viewing mirror; and whereby side view mirrors may be eliminated from said vehicle.

4,439,022

ARRANGEMENT FOR THE POINT- AND LINE-WISE RECORDING OF IMAGE INFORMATION

Axel Gebhardt, Mönkeberg; Heinrich Jürgensen, Raisdorf, and Christian Roes, Kiel, all of Fed. Rep. of Germany, assignors to Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

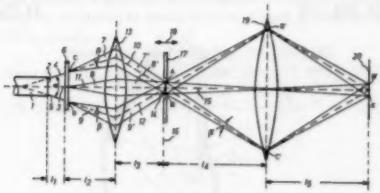
PCT No. PCT/DE80/00193, § 371 Date Aug. 21, 1981, § 102(e) Date Aug. 21, 1981, PCT Pub. No. WO81/01887, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 20, 1980, Ser. No. 296,269

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952209

Int. Cl.³ G02B *5/02, 27/00*

U.S. Cl. 350—572 **9 Claims**



1. In an arrangement for point and line-wise recording of image information on a light sensitive recording medium by means of a group of rays emerging from a light waveguide and being imaged through a diaphragm and a first lens onto the recording medium, the improvements comprising a scatter medium for dividing each ray of the group of rays into a ray bundle diverging with an angle of dispersion (β) being disposed between an exit surface of the light waveguide and the diaphragm, a focusing lens being disposed between the scatter medium and the diaphragm, the spacing (l_1) on the optical axis between the exit surface of the light waveguide and the scatter medium and the spacing (l_2) between the scatter medium and the focusing lens being dimensioned in such manner that the focusing lens superimposes all ray bundles to form superimposed fields (AB) in a plane at a distance (l_3) from the focusing lens, said diaphragm being disposed in the superimposition area of the ray bundles and around the plane, and wherein the spacings (l_4) between the diaphragm and the first lens and the spacing (l_5) between the first lens and the recording medium being dimensioned in such a manner that the diaphragm aperture at the superimposed fields is imaged in a desired scale on the recording medium through the first lens with a focal length f_2.

4,439,023

OPTICAL SYSTEM FOR OPHTHALMOLOGICAL INSTRUMENTS

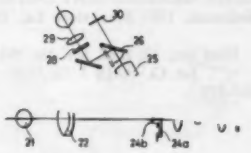
Youich Iba; Ken-ichi Nakahashi, and Masaki Matsubara, all of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 4, 1981, Ser. No. 260,395

Claims priority, application Japan, May 8, 1980, 55-59994

Int. Cl.³ A61B *3/14*; G03B *29/00*

U.S. Cl. 351—206 **4 Claims**



1. An optical system for ophthalmological instruments comprising an illumination system comprising a light source, collector lenses, a ring slit having a central light shielding portion arranged in close proximity an image of said light source formed with said collector lenses and an objective lens so arranged as to form an image of said ring slit in close proximity to the cornea of an eyeball to be examined, and a photographing/observation system comprising said objective lens, a small reflector mirror arranged in close proximity to said ring slit and positioned on and inclined with regard to the optical axis of said objective lens and a relay lens for focusing the rays reflected from the fundus of the eyeball to the examined after said rays have passed through said objective lens and been reflected by said small reflecting mirror.

4,439,024

EYE EXAMINING INSTRUMENT WITH VARIABLE INTENSITY OF ILLUMINATION LIGHT

Yuji Ito, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

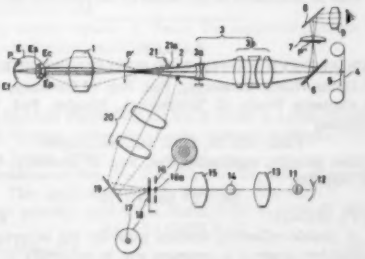
Filed Apr. 23, 1979, Ser. No. 32,683

Claims priority, application Japan, Apr. 25, 1978, 53-49025

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.³ A61B *3/14*; G03B *29/00*

U.S. Cl. 351—207 **26 Claims**



1. An eye examining instrument comprising:

an eye inspecting system for inspecting an eye to be examined;

an illuminating system arranged to direct light into the eye inspection system and toward the eye to be examined and forming an optical path, said illuminating system having a first light shading member at a position conjugate with the anterior part of the eye to be inspected in the optical path

and a second light shading member, for eliminating undesirable light due to the lens of the eye to be inspected in the optical path so as to alter the amount of the illuminating light at the eye to be examined in cooperation with the first light shading member;

at least one of said shading members being variable relative to the other.

4,439,025

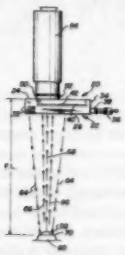
VARIABLE CIRCULAR DUAL IMAGE CORNEAL RADIUS MEASUREMENT INSTRUMENT

Heinz J. Smirmaul, 1307 Brookstone La., Duncanville, Tex. 75137

Filed Aug. 13, 1981, Ser. No. 292,513

Int. Cl.³ A61B *3/10, 3/00*

U.S. Cl. 351—212 **20 Claims**



1. An instrument for measuring the radius of curvature of a cornea of an eye comprising:

a housing;

means mounted within said housing for projecting a reference image on the cornea along an axis perpendicular to said cornea, said reference image comprising substantially a circle having a diameter;

a rod of refractile transparent material disposed within said housing and mounted along said axis for optically forming two images substantially identical to said reference image;

means for varying the diameter of said reference image and said two images substantially identical to said reference image, such that said images form a predetermined image pattern; and

means for measuring the diameter of said reference image when said predetermined image pattern is formed to provide an indication of the radius of curvature of the cornea.

4,439,026

OPTICAL DEVICE WITH TWO REFLECTING SURFACES

Karl-Heinz Wilms, Emmering, Fed. Rep. of Germany, assignor to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

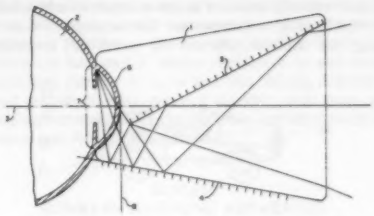
Filed Oct. 26, 1981, Ser. No. 315,067

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040214

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—219 **6 Claims**

1. A double-reflecting contact glass for the observation of the chamber angle of a common eye in proximity of its iris, comprising an eye abutment surface, a reflecting surface arranged laterally of the eye to be examined and a central reflecting surface provided within the area of the common optical axis of the eye as well as of the contact glass, the path of observation rays being guided from the eye of an observer to the central reflecting surface and from the latter by way of the lateral reflecting surface into the interior of the eye, characterized in that the lateral reflecting surface is so arranged with respect to the common optical axis that the plane of said reflecting surface intersects the eye to be examined outside of the corneal area thereof and extends in the direction toward the eye to be examined up to a location beyond a line tangent to the



eye abutment surface and perpendicular to the optical axis of the eye.

4,439,027

REAR PROJECTION APPARATUS

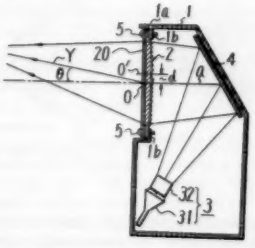
Takizo Shioda; Norio Ito, both of Tokyo, and Hiroshi Horiuchi, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,231

Claims priority, application Japan, Nov. 26, 1981, 56-175582[U]

Int. Cl.³ G03B *21/28*; H04N *5/74*

U.S. Cl. 353—77 **11 Claims**



1. A rear projection apparatus comprising:

a cabinet having a screen attaching portion;

a rear projection screen attached to said screen attaching portion and having a rear side with respect to a viewing position;

image projecting means for projecting an image onto said rear projecting screen from the rear side;

convex lens means disposed at said rear side of said rear projection screen, said convex lens means having an optical axis which is offset from a mechanical center of said convex lens means; and

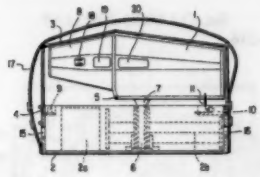
means removably attaching said convex lens means to said screen attaching portion in various orientations relative to the latter with said optical axis of said lens means offset from a mechanical center of said rear projection screen, whereby a light axis of said image from said rear projection screen is deflected in a predetermined direction by changing the orientation of said convex lens means with respect to said screen attaching portion of said cabinet.

4,439,028

PROJECTOR ASSEMBLY

Hellmut Schrader, Am Hüttenkrug 12, D-3057 Neustadt 1, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,971
Int. Cl.³ G03B 21/30
U.S. Cl. 353—119 12 Claims



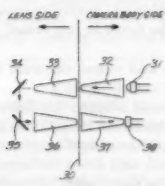
1. A projector assembly comprising: a projector having disposed therein a light source, light paths, lens, film drive and ventilation; a base supporting said projector and having disposed therein an energy supply and control means for film movement and adjustment of focus; electrical connecting means connecting said projector and said base; at least one adjustable telescoping leg with one end mounted in said base and the other end connected to said projector for adjusting the height of said projector relative to said base; and a hood adapted to be placed over said projector and connected with said base to form a closed case for said projector when said at least inetelescoping leg is in its contracted position.

4,439,029

CAMERA WITH INFORMATION TRANSMITTING ELEMENTS

Zenichi Okura, Ichikawa, and Shinsuke Kohmoto, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1982, Ser. No. 448,692
Claims priority, application Japan, Dec. 17, 1981, 56-204216
Int. Cl.³ G03B 7/00
U.S. Cl. 354—479 10 Claims



1. A photographic camera having a camera body with a lens receiving mount, an interchangeable lens having a mount removably engagable with the camera body mount, and a plurality of information transmitting elements comprising:

a light source in the camera body;

light receivers in the camera body corresponding to the respective elements;

optical fiber means in the camera body corresponding to the respective elements for coupling light from the source to the lens receiving mount and from the lens receiving mount to the receivers; and

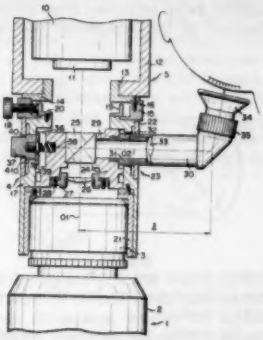
light transmitting means in the lens for returning light associated with the optical fiber means of selected elements to the light receivers of the selected elements, the selected elements representing information transferred from the lens to the camera body.

4,439,030

CONNECTING DEVICE FOR AN ENDOSCOPIC TELEVISION CAMERA

Yasuhiro Ueda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1982, Ser. No. 420,235
Claims priority, application Japan, Oct. 12, 1981, 56-162202
Int. Cl.³ A61B 1/04; G03B 29/00
U.S. Cl. 354—62 8 Claims



1. A connecting device for optically and mechanically connecting an eyepiece section of an endoscope and a light receiving section of a television camera so that the optical axes of these sections are in alignment, comprising:

a cylindrical housing having one end connectable to the eyepiece section and the other end connectable to the light receiving section;

a finder extending section located between the eyepiece section and the light receiving section, and having a first optical axis in alignment with the optical axis extending from the eyepiece section to the light receiving section, and a second optical axis at a given angle to the first optical axis;

supporting means in the housing for supporting the finder extending section so as to be able to rock relative to the housing around the first optical axis;

an eyepiece section for the connecting device connected to the supporting means so as to be rockable therewith and extending outward from the peripheral surface of the housing along the second optical axis for observation of an endoscopic picture through the eyepiece section of the endoscope; and

fixing means capable of fixing the supporting means in a predetermined position.

4,439,031

DIAPHRAGM DRIVING DEVICE FOR A LENS BARREL

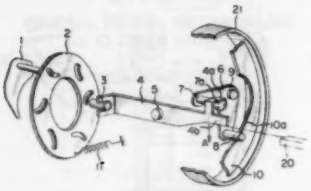
Takeshi Muryoi, Chigasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Continuation of Ser. No. 238,423, Feb. 26, 1981, abandoned. This application Sep. 1, 1982, Ser. No. 413,777
Claims priority, application Japan, Mar. 6, 1980, 55-28207
Int. Cl.³ G03B 9/02
U.S. Cl. 354—274 4 Claims

1. In a diaphragm driving device for a lens barrel which is provided between a diaphragm driving ring having its aperture opening by a diaphragm blade variable by rotation thereof about the optical axis of an optical system and a cam member having, near a mount portion for a camera body, an aperture value adjusting cam surface displaceable in response to operation of an aperture value setting operating member and which regulates the rotation of said diaphragm driving ring in correspondence with a positional variation amount provided by said cam surface during the stop-down operation by a diaphragm

interlocking device provided on said camera body, the improvement comprising:

(a) a pivotable member having a first arm coupled to said diaphragm driving ring and a second arm provided with a first portion engageable with the diaphragm interlocking device of said camera body and a second portion integrated with said first portion, said pivotable member being pivotable with respect to a fixed axis on said lens barrel, said axis being substantially orthogonal to said optical axis lying between said first and said second arm, said pivotable member being prevented from pivotally moving in one direction by the engagement with said diaphragm



interlocking device and pivoting to said one direction in response to the stop-down operation by said diaphragm interlocking device;

(b) means for biasing said pivotable member in said one direction; and

(c) a limiting member having a first portion engageable with said second portion of said second arm during said pivotal movement in said one direction and a second portion engageable with said cam surface and enabling said pivotal movement of said pivotable member in said one direction until both engagements of said first and second portions of said limiting member are accomplished.

4,439,032

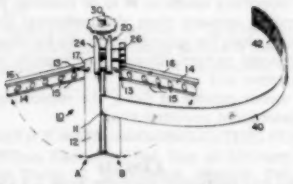
PORTABLE CAMERA SUPPORT

Jon M. Congdon, Kings County, Wash., assignor to PEDCO, Seattle, Wash.

Filed Sep. 27, 1982, Ser. No. 424,619

Int. Cl.³ G03B *17/00*

U.S. Cl. 354—293 **8 Claims**



1. A portable support for a camera or the like which comprises:

a stationary leg including a pair of elongated surfaces skewed acutely with respect to one another;

a pair of extendible legs pivotally mounted to the stationary leg for movement into extended and retracted positions such that the extendible legs abut the elongated surfaces of the stationary leg when the extendible legs are in a retracted position and the extendible legs combine with the stationary leg to form a tripod when the extendible legs are in an extended position;

a securing strap having one end attached to the stationary leg, the securing strap including means for variably securing the portable support to a companion object when the extendible legs are in a retracted position; and

a camera mounting assembly affixed to the stationary leg for releasibly mounting a camera on the portable support.

4,439,033

DRUM-CONTAINING APPARATUS FOR READY PROCESSING AND HANDLING OF PHOTOGRAPHIC MATERIAL

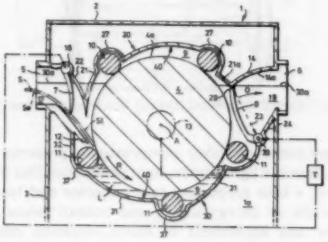
Barrie A. Freeman, Wickford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 27, 1982, Ser. No. 436,906

Claims priority, application United Kingdom, Nov. 4, 1981, 8133189

Int. Cl.³ G03D *3/02, 3/08*

U.S. Cl. 354—316 **12 Claims**



1. Apparatus for treating with a liquid sheets of flexible photographic material having a front side and a reverse side, the front side being covered with a light sensitive emulsion layer, comprising:

a container,

a vessel therein which is adapted for receiving the liquid therein up to a determined level, and is of generally cylindrical configuration, having a vessel sidewall;

a drivable drum having a cylindrical surface and being rotatable about a substantially horizontal axis, the said liquid level present in said vessel being sufficiently high to immerse, during rotation of said drum, a lower region thereof in the liquid,

guiding means adapted for guiding a sheet of said photographic material into contact with said drum, with the reverse side of the sheet contacting said drum surface;

rotatable roller means spacedly disposed about said drum surface so that wall sections of the vessel are present between every two consecutive roller means, which roller means keep said sheet, during its passage about said drum and through the liquid in the vessel, in contact with said drum surface;

an entry port in said vessel sidewall, for introducing said sheet into said vessel,

entry closing means adapted for light-tightly closing said entry port and mounted movably so as to permit, when in open position, the introduction of a sheet of said material into contact with said drum surface,

an exit opening in said vessel sidewall located above the level of the liquid in said vessel and on the side of said vessel opposite said entry port, and

exit-controlling means comprising a part of the vessel sidewall which is movable between a closed position closing said exit opening, and an open position, said movable sidewall part being so shaped as to permit, when in the said closed position, the leading edge of a sheet to slide unobstructedly along the part and on to the vessel sidewall or roller means above said exit opening, and said movable sidewall part being so shaped as to permit, when the movable sidewall part is in open position, a sheet emerging from the liquid to peel away from the drum surface sufficiently to enter the exit opening, said exit-controlling means further comprising

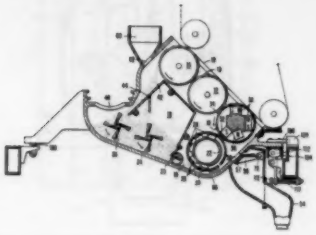
deflecting wall means extending outward from the upper end of said exit opening, and adapted for guiding a peeled-away sheet entering with its leading edge said exit opening, out of the container.

4,439,034

METHOD AND APPARATUS FOR PURGING A COPIER DEVELOPER

Raymond A. Daniels, Thornwood, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 450,958
Int. Cl.³ G03G 15/09
U.S. Cl. 355—3 DD 8 Claims



1. In a magnetic brush developer having a magnetic brush roller, means for generating a brush magnetic field from within said brush roller, a magnetic transport roller and means for generating a transport magnetic field from within said transfer roller, said brush roller and said transport roller positioned so that the pick-up zone of the brush magnetic field is in the throw-off zone of said transport magnetic field, improved apparatus for purging the developer mix from the developer, said improvement comprising:

a purge opening located adjacent the juncture of the throw-off zone of said transport roller and the pick-up zone of said brush roller, said opening covered by a purge door;

said brush field generating means being moveable between a develop position and a purge position; in the develop position, said pick-up zone is in said throw-off zone, and in the purge position, said pick-up zone is outside of said throw-off zone;

means for moving said brush field generating means from the develop position to the purge position;

a catching means attached to said developer at said purge opening for catching the developer mix;

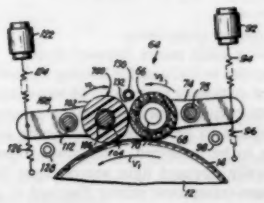
means for opening said purge door so that when said door is open and said brush magnetic field means is in the purge position, the developer mix flows from said throw-off zone out the purge opening and into said catching means.

4,439,035

COPIER CLEANING SYSTEM INCORPORATING RESILIENT NONCELLULAR SEALING ROLLER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Filed Nov. 9, 1978, Ser. No. 958,977
Int. Cl.³ G03G 21/00
U.S. Cl. 355—15 7 Claims



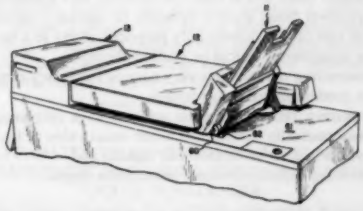
1. In an electrophotographic copier in which an imaging surface is moved to an imaging station at which said surface is provided with an electrostatic latent image of an original, to a developing station at which a developer is applied to said surface to form a developed image, to a transfer station at which said developed image is transferred to a copy sheet, and then to a cleaning station, apparatus at said cleaning station including a cleaning roller having a body of resilient material formed with cells over the surface of said roller which are open to the external environment and isolated from the interior of said body, means for wetting the surface of said body with cleaning liquid, means for effecting relative scrubbing engagement between said imaging surface and the surface of said body, a polyurethane squeegee roller having a surface smoothness of between 2 and 10 microinches positioned in engagement with said imaging surface and said cleaning roller at a point following said cleaning roller, and means for rotating said squeegee roller so that the relative motion between its surface and said imaging surface is substantially zero, whereby said squeegee roller forms a dynamic seal with said imaging surface.

4,439,036

LARGE DOCUMENT ACCESS FOR A SCANNING SYSTEM OF A COPYING MACHINE

James W. Davis, Richardson; Bradley W. Larson, Garland; Barry C. Kockler, Lewisville; Daniel T. Noonan, Irving; N. Flynt Moreland, Mesquite, and Lonnie K. Spears, Murphy, all of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,410
Int. Cl.³ G03B 27/62
U.S. Cl. 355—75 6 Claims



1. In a copying machine comprising a frame, an exposure platen mounted in said frame for exposing bulky documents, an exposure station mounted in said frame separate from said exposure platen for exposing sheet type documents, a platen cover for covering said exposure platen, sheet transport means having a drive input positioned within said platen cover for transporting said sheet documents to said exposure station, sheet feeder means having a drive input for receiving original sheet documents and feeding said sheet documents to said transport means, the improvement comprising:

a. means for pivotably mounting said platen cover containing said transport means to said frame in swing-up relationship from a lowered single sheet operating position to a raised position for providing access to said exposure platen;

b. means for pivotably mounting said feeder means in a swing-away relationship from single sheet operating position of cooperation with said transport means when said cover is in lowered position, to a removed position to provide side access to said platen; and

c. means cooperating with said drive input to said transport means and with said drive input to said feeder means for actuating said transport and said feeder means when said transport means and said feeder means are in a sheet copying position.

4,439,037

PROCESS FOR OPTICALLY DETERMINING THE MEAT-TO-LARD-RATIO IN FOR INSTANCE SLAUGHTERED ANIMALS

Allan Northeved, Farum, and Ole Nilsson, Olstykke, both of Denmark, assignors to Medicoteknisk Institut, Svejsecentralen, Glostrup, Denmark

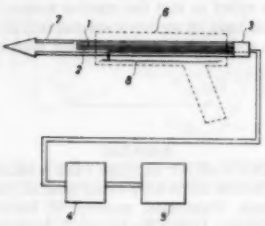
PCT No. PCT/DK79/00056, § 371 Date Jul. 9, 1980, § 102(e) Date Jul. 9, 1980, PCT Pub. No. WO80/01205, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 6, 1979, Ser. No. 273,873

Claims priority, application Denmark, Dec. 8, 1978, 5546/78

Int. Cl.³ G01J *3/46*; G01N *21/84*

U.S. Cl. 356—402 **2 Claims**



1. A process for optically evaluating the meat-to-lard-ratio in slaughtered animals or portions thereof, comprising:

inserting a probe comprising at least one light means including at least one transmitter transmitting light of a predetermined color and at least one receiver, said transmitter and receiver being located opposite or behind a cutting edge of said probe, substantially perpendicularly to a surface of a slaughtered animal or portion thereof,

transmitting red light in a very narrow frequency band about a predetermined wave length,

measuring reflected signals relative to a reference value automatically determined as the mean value of the lowest value in a series of received signals, and

recording reflection versus penetration depth.

4,439,038

METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE COLOR OF A MOVING WEB

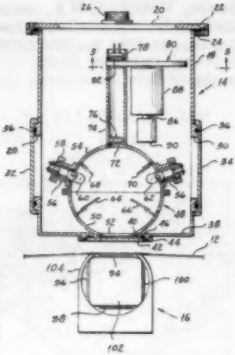
John W. Mactaggart, Bolton, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada

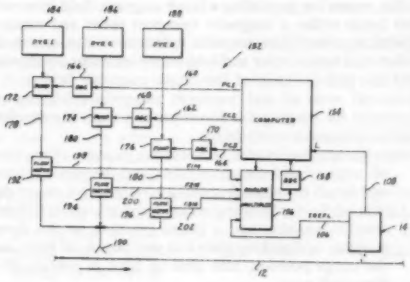
Filed Mar. 3, 1981, Ser. No. 240,171

Int. Cl.³ G01N *21/27*

U.S. Cl. 356—408 **8 Claims**

1. A method of controlling the application of a plurality of colorants having known absorption spectra to a continuously formed material moving along a path including the steps of applying said colorants to said material at a first location along said path, continually measuring the actual reflectance spectrum of said material at a second location along said path spaced downstream from said first location, providing values corresponding to a desired reflectance spectrum of said material, each of said spectra comprising a relatively large number of substantially monochromatic components extending substantially over the rang visible wavelengths, said reflectance spectra having substantially uniform weighting as a function of wavelength, computing from each measured reflectance spectrum and from said absorption spectra the changes in concentration of said colorants which would minimize the sum of the squares of the differences between corresponding components of a subsequently measured reflectance spectrum and said desired reflectance spectrum, and changing the concentrations





of said colorants applied to said material at said first location in accordance with said computed concentration changes.

4,439,039

PHOTOMETER

Osmo A. Suovaniemi, Helsinki, Finland, assignor to Eflab Oy, Helsinki, Finland

PCT No. PCT/FI81/00055, § 371 Date Mar. 9, 1982, § 102(e) Date Mar. 9, 1982, PCT Pub. No. WO82/00361, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 10, 1981, Ser. No. 359,674

Claims priority, application Finland, Jul. 11, 1980, 802221

Int. Cl.³ G01N *21/27*

U.S. Cl. 356—416 **3 Claims**

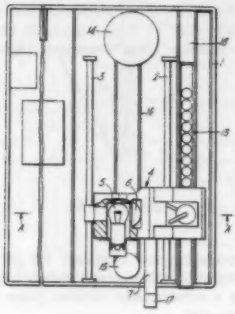
1. A photometer comprising:

a case having guide means disposed therein;

means disposed in said case for holding a plurality of linearly arranged stationary samples to be measured;

a one-piece optics frame displaceably mounted along said guide means to be displaced proximate to each of the samples to be measured, said optics frame including a horizontally disposed light source, light filtering means and a semi-transparent mirror disposed at a 45° angle to provide a vertical measurement beam and a horizontal reference beam, an opening in said optics frame dimensioned so that said means for holding said samples and said samples may pass therethrough, a reference detector for

measuring the light of said reference beam disposed horizontally from said light source and a measurement detec-



tor disposed vertically above said semi-transparent mirror and said opening in said optics frame.

4,439,040

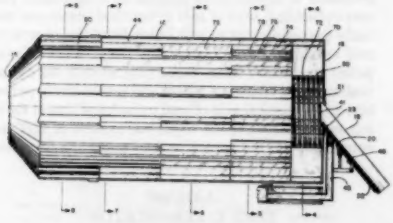
RECYCLING APPARATUS FOR PARTICULATE ASPHALTIC CONCRETE

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Division of Ser. No. 180,297, Aug. 22, 1980, Pat. No. 4,382,682, which is a continuation-in-part of Ser. No. 1,051, Jan. 28, 1979, Pat. No. 4,219,278, Ser. No. 155,502, Jun. 2, 1980, Pat. No. 4,265,546, and Ser. No. 139.640, Apr. 14, 1980, which is a continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, Pat. No. 4,208,131, and Ser. No. 906,734, May 17, 1978, Pat. No. 4,240,754. This application Jan. 27, 1983, Ser. No. 437,495

Int. Cl.³ B01F *15/02, 15/06;* B28C *5/46*

U.S. Cl. 366—2 **5 Claims**



1. In a process for gradually heating and mixing particulate asphaltic concrete composition in a rotating drum between a first drum end at which said composition is introduced and a second drum end at which heated composition is recovered, the improvement comprising

inserting a chute into said second drum end to contact said composition, sensing the composition temperature contacted by said chute in said drum, and further inserting or retracting said chute to recover composition of a selected temperature.

4,439,041

FEED BUSHING FOR SINGLE-SCREW EXTRUDERS

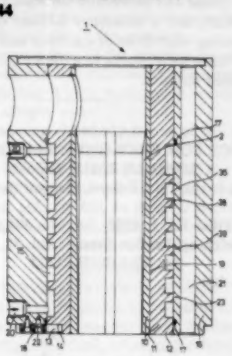
Gerard Schaeffer, Lampertheim, and Dieter Hoffarth, Worms, both of Fed. Rep. of Germany, assignors to Paul Kiefel GmbH, Worms, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 365,101

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 8110512[U]

Int. Cl.³ B01F *15/06*

U.S. Cl. 366—144 **11 Claims**



1. A feed bushing for single-screw extruders for the plasticizing extrusion of plastics under a high inertia resistance comprising an outer casing, a grooved bushing enclosed in the outer casing and receiving the screw of the extruder and a cooling system, wherein the grooved bushing is assembled from a tubular grooved inset and a tubular reinforcement surrounding the grooved inset, the inset being shrink-fitted into the reinforcement with a shrinkage allowance for withstanding the maximum forces of inertia of the screw.

4,439,042

APPARATUS TO CONTINUOUSLY MIX AND HOMOGENIZE POWDERED SUBSTANCES WITH LIQUID SUBSTANCES

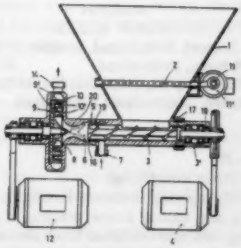
Guido Bertoglio, Viganello, Switzerland, assignor to Water-Line S.A., Mezzovico, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,451

Claims priority, application Switzerland, Oct. 23, 1981, 6829/81

Int. Cl.³ B01F *7/10*

U.S. Cl. 366—154 **6 Claims**



1. Apparatus for the continuous mixing and homogenization of powdered substances with liquid substances, comprising a hopper (1) adapted to contain the powdered substance; a screw (3) situated at the base of the hopper, a housing surrounding said screw said housing having a terminal construction followed by a converging-diverging chamber functioning as a

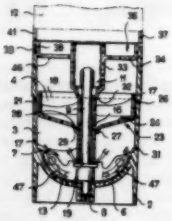
venturi, a motor (4), for actuating the screw such that the powdered substance is transported to a said terminal constriction (5) to hold back the powder flowing into said converging-diverging chamber (6); an injector conduit, an annular nozzle (16) from which liquid, introduced under pressure from said injection conduit (7) is discharged at great velocity in an annular stream into said venturi; a homogenization turbine, comprising a rotor with a plurality of rings (9') having channelling (8') to which rotor the powdered mixture plus liquid is fed from said venturi, and a stationary diffuser (10) having rings (10') interfingering with those of the rotor and having channelling (15); said rotor terminating in a discharge conduit (14) for the homogenized mixture.

4,439,043

APPLIANCE FOR PREPARING MAYONNAISE OR SIMILAR EMULSIONS

Joanny Daloz, Is sur Tille, France, assignor to SEB S.A., Selongey, France

Filed Jul. 1, 1982, Ser. No. 394,472
Claims priority, application France, Jul. 31, 1981, 81 14917
Int. Cl.³ B01F *15/02*
U.S. Cl. 366—164 11 Claims



1. A domestic appliance for preparing mayonnaise or similar emulsions, comprising a mixing chamber in which is mounted a rotary mechanical beater, an oil reservoir, a calibrated communication passage between the oil reservoir and the mixing chamber, and means for causing the oil to flow from the reservoir to the mixing chamber via said calibrated communication passage during the mixing operation, the reservoir and the mixing chamber being arranged within an appliance body on each side of a sliding separator, the end of said calibrated communication passage which is nearest the mixing chamber opening into a suction zone of the beater.

4,439,044

SCREW MIXER

Urs Büttiker, Lostorf, Switzerland, assignor to Rolf Baumgartner AG, Oftringen, Switzerland

Filed May 23, 1983, Ser. No. 497,143
Claims priority, application Switzerland, Jun. 2, 1982, 3373/82
Int. Cl.³ B01F *7/00, 13/10*
U.S. Cl. 366—292 5 Claims

1. A screw mixer comprising:

a downwardly tapering container having container walls;

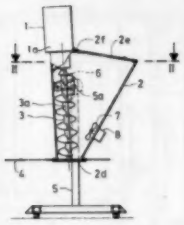
a conveying and mixing screw defining a screw axis and protruding into said container from above;

said container forming substantially triangular cross-sections with rounded corners in planes extending normally relative to said screw axis of said screw;

said screw being arranged in one of said corners;

said container defining a height and a wall including said rounded corners;

said container wall, at the region of said corner in which said screw is arranged, forming a curved section extending essentially over the entire height of said container at an essentially constant distance from said screw; and



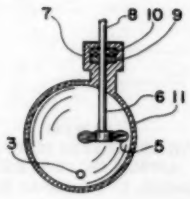
means for mounting said container for pivotal movement about a substantially horizontal axis such that said screw is pivoted in a substantially vertical plane when said container is pivoted.

4,439,045

ROTATIONAL MIXING VESSEL

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 758,141, Jan. 10, 1977, Pat. No. 4,326,811. This application Feb. 3, 1982, Ser. No. 345,211
Int. Cl.³ B01F *7/22*
U.S. Cl. 366—297 6 Claims



1. A rotational mixing vessel for mixing and agitating the fluid medium and slurry contained in said rotational mixing vessel, said mixing vessel comprising in combination:

(a) a cylindrical vessel having an inlet and an outlet; and

(b) a propeller rotatably disposed adjacent to the cylindrical wall of said cylindrical vessel wherein the plane of rotation of said propeller substantially includes the central axis of said cylindrical vessel and the axis of the rotation of said propeller is substantially parallel to a tangential plane of said cylindrical wall of said cylindrical vessel and substantially perpendicular to and offset from the central axis of said cylindrical vessel; whereby, the rotation of said propeller generates a thrust force tangential to the cylindrical wall of said cylindrical vessel and substantially perpendicular to the central axis of said cylindrical vessel for inducing and maintaining the rotational motion of said medium rotating about the central axis of said cylindrical vesel.

4,439,046

TIME INTERPOLATOR

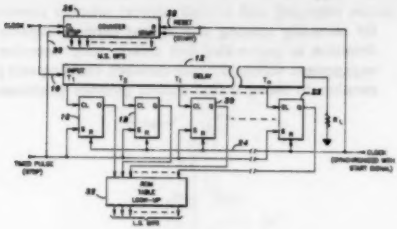
David R. Hoppe, McHenry, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 7, 1982, Ser. No. 414,769
Int. Cl.³ G04F *8/00*
U.S. Cl. 368—120 3 Claims

1. An improved resolution circuit for a digital elapsed time measuring circuit which utilizes a system clock signal as a time standard, wherein the improvement comprises:

tapped delay means for delaying the clock signal, said delay means being driven by the clock signal, said delay means having a plurality of n taps;

a plurality of n latch means for capturing the time of arrival of the clock signal, each of said plurality of latch means having a clock signal input terminal, each of said clock signal input terminals being connected to a different one of said plurality of n taps, each of said plurality of latch means having a stop pulse input terminal and an output



terminal, a signal on said output terminal being responsive to a time coincidence of said time of arrival of the clock signal and of said stop pulse; and

means for converting said time coincidence to a digitally coded output signal corresponding to said time coincidence.

4,439,047

Patent Not Issued For This Number

4,439,048

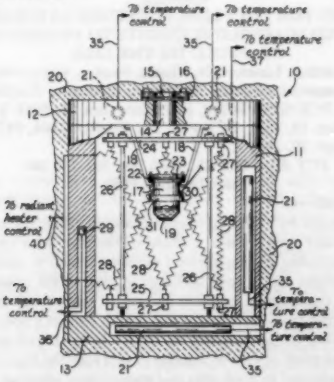
ACCELERATING RATE CALORIMETER AND METHOD OF OPERATION

Donald I. Townsend; Richard H. Solem, both of Midland; Edward E. Timm, Coleman, and Victor J. Caldecourt, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 906,182, May 15, 1978, Pat. No. 4,208,907, which is a continuation-in-part of Ser. No. 723,686, Sep. 16, 1976, abandoned. This application Dec. 10, 1979, Ser. No. 101,937

Int. Cl.³ G01K *17/00*

U.S. Cl. 374—34 **1 Claim**



1. A method for measuring the adiabatic self-heat rate, and the time to maximum rate of an exothermic chemical reaction, as a function of temperature, to determine the adiabatic thermal runaway characteristics of reactive chemicals, the method comprising the steps of:

placing a sample of a reactive chemical (19) in a sample vessel (17) and closing said vessel;

positioning the closed sample vessel (17) inside of a reaction chamber (10), such that said vessel is surrounded by the environment of the chamber;

heating the sample vessel (17) in fixed temperature increments to a temperature at which the adiabatic self-heat rate of the exothermic reaction is detectable by a time and temperature recorder unit (42, 43, 44);

allowing the reaction to go to completion adiabatically and recording the adiabatic self-heat rate of the reactive chemical, by using a time and temperature recorder unit (42, 43, 44) during the course of the reaction;

holding the temperature of the reaction chamber (10) and the environment in said chamber, at the same temperature as the sample vessel (17), to maintain an adiabatic condition for the sample vessel (17); and

continuously sensing the temperature of the sample vessel (17) during the reaction; and

continuously recording the temperature of the sample vessel (17) as a function of time, in the time and temperature recorder unit (42, 43, 44), to thereby derive the time to maximum rate for said reaction.

4,439,049

TEMPERATURE SCANNER

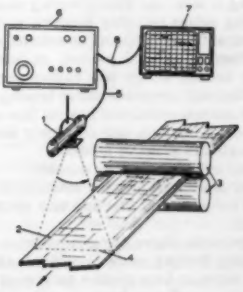
Bastiaan Hoogendoorn, Heemskerk; Nicolaas L. van Schagen, Alkmaar; Johannes C. A. van den Bemt, Schagen, and Jan W. Zeijlmans, Santpoort-Noord, all of Netherlands, assignors to Estel Hoogovens B.V., Netherlands

Filed Feb. 2, 1982, Ser. No. 345,086

Claims priority, application European Pat. Off., Feb. 2, 1981, 81200070.1

Int. Cl.³ G01J *5/00*; G01K *13/06*

U.S. Cl. 374—124 **7 Claims**



1. A temperature scanner for scanning the temperature of the surface of a hot steel strip moving relative to the scanner, the scanner comprising

(a) a photocell,

(b) scanning means enabling said photocell to optically scan a plurality of different strips across said surface as the surface moves,

(c) electronic analysis means connected to said photocell, and

(d) display means connected to said electronic analysis means to display the output of said electronic analysis means,

(e) said electronic analysis means is adapted to operate in all of three modes, which modes are

(i) a first mode in which said electronic analysis means compares the temperatures detected by said photocell with a reference temperature level and through said display means displays a map of the surface in which areas of the surface whose temperatures are above said reference temperature level are distinguished from areas whose temperatures are below said level,

(ii) a second mode in which at least one temperature

profile across the surface obtained from one or more scans of said surface strip is displayed, and

(iii) third mode in which a plurality of said profiles are displayed simultaneously, spaced apart on the display means,

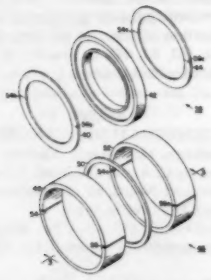
(f) said electronic analysis means further comprising switching means enabling operation of said electronic analysis means in any one of the said three modes of operation.

4,439,050

ROTARY BIT BEARING SYSTEM

Lloyd L. Garner, Fort Worth, Tex., assignor to Globe Oil Tools, Inc., Fort Worth, Tex.

Filed Jun. 11, 1981, Ser. No. 272,659
Int. Cl.³ F16C *17/04*
U.S. Cl. 384—100 **10 Claims**



1. An improved bearing system for a cutter cone of a rotary bit comprising at least one sliding bearing means wherein said sliding bearing means rotatably supports said cutter cone to withstand lateral forces including an external cylindrical bearing face defined about said journal, an internal cylindrical bearing face defined within said cutting cone, and a freely rotatably cylindrical composite sleeve bearing means mounted between said internal cylindrical bearing face and said external cylindrical bearing surface, said composite sleeve comprising:

(a) a first cylindrical sleeve member;

(b) a second cylindrical sleeve member;

(c) a spacer disc thrust member mounted in freely rotatable relation between said first and said second sleeve members; and

(d) said composite sleeve being mounted to permit the sliding mating bearing surfaces within said lateral sleeve bearing means to have relative movement as a function of the friction co-efficient between said surfaces.

4,439,051

SINGLE PRINTING STATION, MULTIPLE RECORD MEMBER FEEDING MECHANISM

Raymond L. Lawter, Zanesville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 24, 1982, Ser. No. 423,368
Int. Cl.³ B41J *11/50*
U.S. Cl. 400—605 **10 Claims**

1. A mechanism for moving a plurality of first and second record members past a single printing station comprising:

a supporting surface;

a printing mechanism positioned adjacent said supporting surface for printing data on a record member positioned at a printing station on said supporting surface;

a first support member rotatably mounted adjacent said supporting surface for movement between a first printing positions and second nonprinting actuated position;

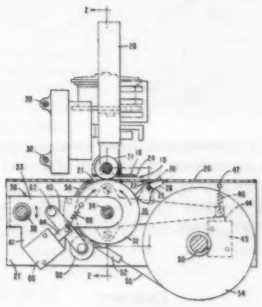
a platen member rotatably mounted between said first support member and a second support member and disposed adjacent said printing mechanism;

drive means engaging said platen member and mounted on said first support member, said drive means operable for rotating the platen member in a first and second feeding direction;

said second support member rotatably mounted adjacent said platen member;

a first driven roller member rotatably mounted on said second support member;

means engaging said second support member constructed for normally rotating said second support member in a direction to move the first driven roller member into engagement with said platen member, enabling said platen member to move a first record member positioned between the platen member and the driven roller member to said printing station adjacent said printing mechanism when rotated in said first feeding direction by said drive means and for removing the first record member from said printing station when rotated in said second feeding direction;



and first actuating means engaging said first support member and operable to rotate said first support member to said actuated position whereby said platen member is removed from said printing position enabling a second record member to be positioned on said supporting surface adjacent said printing mechanism.

4,439,052

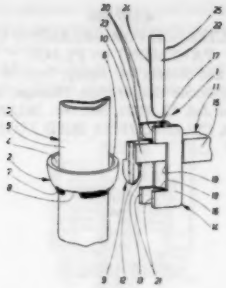
DEVICE FOR COUPLING TOGETHER LATERALLY DIRECTED SCAFFOLD ELEMENTS TO UPRIGHTS IN A SCAFFOLD OR THE LIKE

Harry Wallther, Limmerhult, Hindås, Sweden, assignor to Ställningsgruppen i Göteborg Aktiebolag, Göteborg, Sweden

PCT No. PCT/SE80/00250, § 371 Date Jun. 11, 1981, § 102(e) Date Jun. 11, 1981, PCT Pub. No. WO81/01164, PCT Pub. Date Apr. 30, 1981
PCT Filed Oct. 15, 1980, Ser. No. 276,344
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—49 **8 Claims**

1. A device for coupling together laterally directed scaffold elements and uprights in a scaffold or the like, each coupling device including an engagement member which is connected to the upright and is open upwards at least in the position of use, said engagement member having a wall which extends with spacing from the upright and which defines a space situated between the upright and the wall, a hook-shaped member which is situated at least at one end of said scaffold element and which is adapted to hook into said engagement member, a first clamping member which is movable in relation to the scaffold element and which comprises at least one clamping surface, said first clamping member being arranged with at least said one clamping surface to bear against the upright, and a second clamping member which is adjustable between a release position and a locking position and which is adapted, in the locking position, to be forcibly gripped between said first clamping

member and said scaffold element so that said first clamping member is pressed towards the upright and the scaffold element is pressed in the direction out from the upright and as a result is clamped by means of said hook-shaped member in the engagement member.



4,439,053

SWIVEL JOINT, ESPECIALLY FOR SEATS WITH ADJUSTABLE BACKREST

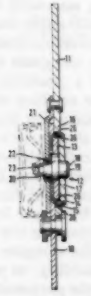
Herbert Pelz, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remschied-Hasten, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,176

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032374

Int. Cl.³ F16C *11/00*

U.S. Cl. 403—101 **4 Claims**



1. A swivel joint, especially for seats with adjustable backrests, comprising a first link member adapted to be fixed to a seat; a second link member adapted to be fixed to a back rest; a pivot pin having a pair of coaxial cylindrical portions and an eccentric portion arranged between and integral with said coaxial portions; means for angularly adjusting said first and said second link member with respect to each other and for holding the same in any adjusted position and comprising an internal gear integral with one of said link members, a spur gear integral with the other of said link members and having teeth meshing with teeth of said internal gear, the gear integral with the other of the said first and second link members being mounted on said eccentric portion of said pivot pin; means connected to the one of said first and second link members for turnably mounting said coaxial cylindrical portions of said pivot pin; and elastic buffer elements mounted at the bottom lands of at least one of said gears, wherein at least one of said gears is provided with an annular groove concentrically arranged and axially spaced at a small distance from the dedendum circle thereof and a plurality of radially extending cutouts respectively leading from said groove to the bottom lands between the flanks of all teeth, said elastic buffer elements being integrally connected to each other by a ring located in and filling said annular groove and webs located in and filling said cutouts.

4,439,054

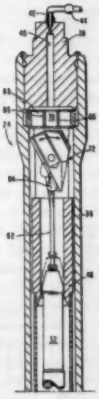
LATCHING MECHANISM

Luciano Veronesi, O'Hara Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1980, Ser. No. 217,056

Int. Cl.³ F16D *3/48*

U.S. Cl. 403—322 **7 Claims**



1. A latching mechanism comprising:

a mounting member;

a pivotable member pivotably attached to said mounting member having a first bore and a second bore therein and having a first slot, a first bore, and a second slot therein with each extending from the top to the bottom ends of said pivotable member with said first slot being defined along one edge of said pivotable member and extending into said first bore, with said first bore being defined adjacent to and substantially parallel with but not in colinear alignment with said first slot and having a ledge therein, and with said second slot being defined along the length of said first bore and extending into said first bore;

biasing means attached to said pivotable member for pivoting said pivotable member relative to said mounting member;

a contact member having a head on one end thereof with said head being capable of passing into said first bore and not being capable of passing through said first slot and said second slot, with said contact member being capable of being inserted through said first slot, said first bore, and said second slot and with said head being capable of being captured by said ledge in said first bore; and

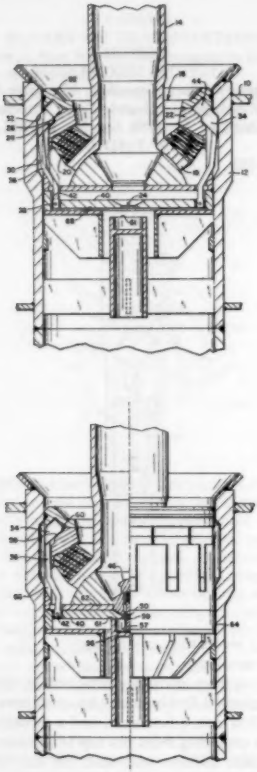
drive means connected to said contact member for moving said head into contact with said pivotable member thereby pivoting said pivotable member relative to said mounting member thereby allowing said head to be inserted in said first bore while said contact member passes through said first slot thus latching said contact member to said pivotable member.

4,439,055

ANCHOR CONNECTOR

Daniel F. Quigg; Darrell L. Jones, both of Ventura; Richard G. McFerron, Camarillo, and James L. Bell, Jr., Oak View, all of Calif., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Jan. 25, 1982, Ser. No. 342,452
Int. Cl.³ B25G 3/18; F16B 21/00; F16D 1/00
U.S. Cl. 403—330 12 Claims



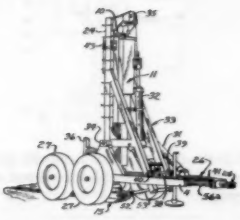
1. An anchor connector for connecting a tension leg of a tensioned leg platform to a subsea template comprising: A flexible joint having a universally pivotable member for connection to the tension leg, and a fixed member; said fixed member having a first circumferential recess on its outer diameter at an elevation above the pivot center of said flexible joint with an upwardly facing shoulder at its lower end, and a second circumferential recess on its outer diameter, above, contiguous with, and deeper than said first recess; a cylindrical template receptacle having an annular circumferential template recess on its inner diameter with a downwardly facing shoulder at its upper end; a latch carrier free to move between an upper position and an lower position with respect to said flexible joint; a plurality of latch dogs pivotally connected to said latch carrier, and having a dog head at the upper end of each; said dogs, template recess, and first recess being sized such that in the lower latch carrier position said dog head must engage both the upwardly facing shoulder of said first recess and the downwardly facing shoulder of said template recess on upward movement of said flexible joint; and said dogs and said second recess being sized such that in the upper latch carrier position said dog head fits within said second recess sufficiently for said dogs to clear said downwardly facing shoulder of said template recess on upward movement of said flexible joint.

4,439,056

MACHINE SUITABLE FOR BREAKING CONCRETE PAVEMENT IN PLACE

Clair H. Reilly, and Robert M. Reilly, both of Ossian, Iowa, assignors to Pettibone Corporation, Chicago, Ill.

Filed Jul. 13, 1981, Ser. No. 282,886
Int. Cl.³ E01C 19/34; B25D 17/28
U.S. Cl. 404—90 8 Claims



1. A machine suitable for breaking concrete pavement in place including a mobile chassis having guide uprights generally vertical during operation, and a generally vertically disposed power driver having at its lower end a shoe for engagement with the pavement and subject to repetitive downward powered driving action by the power driver with sufficient force to progressively break chunks from the pavement as it is drawn along the pavement, said power driver at its upper portion being free to undergo a bobbing action but being guided at an upper portion thereof for vertical movement by guide angles having flanges and a vertical guide upright, one flange of each angle being associated with the power driver and the other flange of each angle being with the guide uprights, characterized by the improvement in which:

said flange guide angles, and guide uprights are adapted to permit and withstand a pendulum like swinging of the power driver; and the machine also includes cushioned tow means for advancing the lower end of the power driver, including said shoe, with a relatively intermittent movement compared to the relatively constant movement of the chassis; said cushioned tow means further including elongate tow means, vertically flexible between its ends, extending forwardly from said lower end, and biasing means applied to the elongate tow means at the forward end thereof to urge the elongate tow means forwardly with long-stroke yieldability, to permit the shoe to lag when forced through the pavement surface by the driver, but advancing it rapidly between instances of lagging.

4,439,057

SOIL COMPACTOR DRIVE ASSEMBLY

Gale Sprague, R.R. 2, St. Joseph, Mo. 64505

Filed Apr. 7, 1982, Ser. No. 366,305
Int. Cl.³ E01C 19/34; F16H 23/04
U.S. Cl. 404—133 3 Claims

1. A compacting device comprising:

a box housing;

a motor mounted on said box housing and having its output shaft disposed along a generally vertical axis;

a rotatable member coupled with said shaft for rotation about said axis,

said member having a generally planar surface disposed in a plane oblique to said axis;

a generally cylindrical drive member integral with said rotatable member and extending perpendicular to said planar surface;

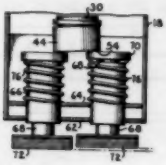
a bell housing partially enclosing said cylindrical drive mem-

ber and adapted to be acted upon by said drive member, said bell housing presenting a generally planar drive surface;

bearing means disposed between said bell housing and said drive member to accomodate rotation of the latter within said bell housing;

means for holding said bell housing against rotation;

first and second driven shafts mounted in said box housing,



each of said driven shafts having a planar contact surface in engagement with said drive surface;

first and second tamping feet coupled with said first and second driver shafts, respectively;

first and second spring means coupled with said box housing and disposed to act on said first and second driven shafts,

whereby said drive member alternately moves said driven shafts in a downwardly direction and said spring means move said driven shafts in the opposite direction.

4,439,058

ASYMMETRIC SEAWEEDS

Bernard J. Le Mehaute, Miami, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed Feb. 8, 1982, Ser. No. 346,894

Int. Cl.³ E02B *3/04*

U.S. Cl. 405—24 **15 Claims**

1. A device which, once implanted in the water adjacent to a surf zone of a beach, channelizes wave energy to inhibit coastal erosion and enhance accretion comprising:

(a) an anchoring means;

(b) a base;

(c) a plurality of dynamically asymmetric strips, one end of which is attached to said base and the other end of said strip extends away from said base into the boundary layer of the water near the bottom or near the surface;

(d) a means for attaching said asymmetric strips to said base; and,

(e) said asymmetric strips having means permitting a decrease in the width of said asymmetric strips when wave motion is directed toward one side of said asymmetric strips, and having means permitting an increase in the width of said asymmetric strips when wave motion is directed toward the other side of said asymmetric strips;

whereby such decrease and increase in said width of said asymmetric strips being controlled by wave motion to inhibit coastal erosion and enhance accretion.

4,439,059

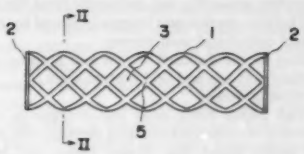
ARTIFICIAL REEF UNIT

Kenji Kikuzawa, and Shozo Akasaka, both of Moriyama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 166,912, Jul. 8, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 318,859

Int. Cl.³ A01K *61/00*; E02B *3/00*

U.S. Cl. 405—25 **11 Claims**



1. An artificial reef unit comprising a hollow structure formed by spirally winding elongated fiber-reinforced plastics and having at one end thereof a first opening and at the other end thereof a second opening and having a peripheral framework extending from the circumference of said first opening to the circumference of said second opening,

said peripheral framework comprising a plurality of first fiber-reinforced plastic bands wound spirally about an axis of the hollow structure from said first opening to said second opening at an oblique angle with the axis to have a plurality of phases of the number corresponding to the number of the first fiber-reinforced plastic bands and a plurality of second fiber-reinforced plastic bands wound spirally about the axis in a direction opposite to said first fiber-reinforced plastic bands to have a plurality of phases of the number corresponding to the number of the second fiber-reinforced plastic bands, thereby forming lattice pattern windows respectively defined by said first fiber-reinforced plastic bands and said second fiber-reinforced plastic bands intersecting therewith,

each first fiber-reinforced plastic band and each second fiber-reinforced plastic band being composed of at least two layers of elongated fiber-reinforced plastics each comprising glass-based fibers and a thermohardened resin, thus rendering each of the intersections of said first fiber-reinforced plastic bands and said second fiber-reinforced plastic bands to be a unitary joint formed of at least four layers of fiber-reinforced plastics in which each of the layers constituting said first fiber-reinforced plastic band is laid alternately with each of the layers constituting said second fiber-reinforced plastic band,

said fiber-reinforced plastics having a bending strength of 18 to 100 kg/mm^2 and a modulus of elasticity of 800 to 7,000 kg/mm^2,

said hollow structure having a cross-sectional area on a plane perpendicular to said axis of 0.3 to 7 m^2,

said first fiber-reinforced plastic band and second fiber-reinforced plastic band each having a cross-sectional area of 2 to 15 cm^2,

said peripheral framework having a total band surface area of 15 to 50% based on the imaginary entire surface area of framework,

said windows each having an open area of 0.1 to 0.8 m^2.

4,439,060

MARINE CIRCULATOR

Mary A. Liscio, 133 Brewery Rd., New City, N.Y. 10956

Filed Nov. 9, 1981, Ser. No. 319,364

Int. Cl.³ E02B *15/02*

U.S. Cl. 405—61 **5 Claims**

1. A marine circulator comprising:

housing means including substantially continuous cylindrical-shaped wall means of predetermined axial extent and

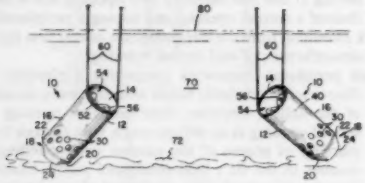
predetermined circumferential size, said housing means being open at a top end thereof and closed at a bottom end thereof by closure means integral with said housing means to prevent entry of water and debris through the bottom end of said closure means;

said closure means including a substantially flat bottom portion of predetermined circumferential size, smaller than the predetermined circumferential size of said cylindrical wall means, and concentrically arranged with respect thereto, and a tapered portion integral with and extending upwardly and outwardly from the periphery of said bottom portion and integrally joined to the lower end of said cylindrical wall means;

mounting means disposed within said housing means intermediate said top and said bottom ends;

fluid moving means;

said wall means being solid and continuous except for a plurality of openings extending through said wall means in the region above said closure means and between said mounting means and said fluid moving means, said openings being arranged about the periphery of said cylindrical wall means in the aforementioned region;



said flat bottom portion adapted to support said circulator upon the bottom surface of a body of water, whereby said openings are displaced from said bottom portion to prevent mud and/or debris from entering said housing means;

flexible cable means coupled to the upper end of said housing means for suspending the marine circulator submerged in a body of water;

said fluid moving means comprising a drive motor carried by said mounting means and a propeller driven by said drive motor and arranged so that when said housing means is disposed in a body of fluid and said drive motor is energized, fluid is drawn into said housing means through said plurality of openings, and the fluid drawn into said housing means is propelled out of said housing means through the top end thereof whereby, when said circulator is submerged in a body of water so that its top end is closer to the surface of the water than said bottom means, water from the lower depths of the body of water is delivered toward the surface of the body of water to alter the temperature of the water in the region of said surface.

4,439,061

ALUMINUM STOPLOGS

George E. Whipps, Athol, Mass., assignor to Whipps, Inc., Athol, Mass.

Filed Feb. 16, 1982, Ser. No. 348,802

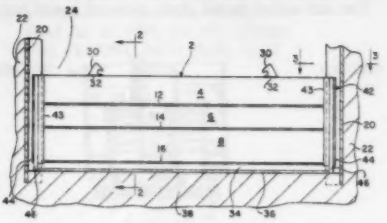
Int. Cl.³ E02B 7/36, 7/54

U.S. Cl. 405—104 **8 Claims**

1. A stoplog for use in forming a stoplog gate, said stoplog comprising

two or more parallel elongate metal members which are shaped and attached to one another so as to form a single rigid hollow structure characterized by two parallel spaced flat faces, a bottom wall, two side walls, and a top wall, with at least one of said faces being substantially impervious to water, and

sealing means disposed about said at least one water-impervious face along said side walls and said bottom wall, said sealing means comprising (a) at least one bottom groove in said bottom wall, said at least one bottom groove extending along substantially the entire length of said bottom wall and being open at its bottom side, (b) at least one side groove in each of said two side walls, each of said side grooves extending along at least a part of the length of said side walls and being open in a direction perpendicular



to said flat faces, and (c) a plurality of resilient strips secured in said bottom and side grooves, with portions of said strips protruding from said grooves and said protruding portions each having a generally flat surface for engaging and forming a watertight seal with adjacent surfaces when said stoplog is disposed in a log-retaining structure.

4,439,062

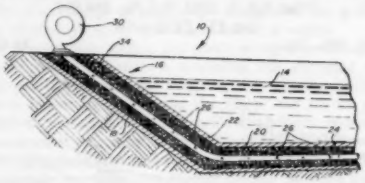
SEALING SYSTEM AND METHOD FOR SEALING EARTHEN CONTAINERS

Robert P. Kingsbury, Laconia, N.H., assignor to American Colloid Co., Skokie, Ill.

Filed Dec. 21, 1981, Ser. No. 332,351

Int. Cl.³ E02B 3/04

U.S. Cl. 405—24 **15 Claims**



1. A method for sealing an earthen container to prevent fluid seepage into surrounding soil, comprising:

disposing a layer comprising water expandable colloidal clay onto soil to form an outer seal,

disposing a layer of granular fill material on said lower seal,

disposing a layer comprising water expandable colloidal clay onto an upper surface of said granular fill material to form an inner seal, and

introducing a fluid into said layer of granular fill material, between said upper and lower seals to provide a positive pressure between said upper and lower seals greater than the pressure on an upper surface of said upper seal.

4,439,063

HYDRAULIC CONTROL MEANS

Herbert Heitkamp, Werne, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,381

Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019374

Int. Cl.³ E21D 9/06; F16D 31/02

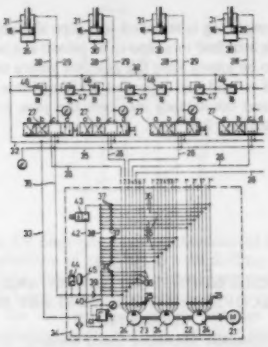
U.S. Cl. 405—145 **23 Claims**

1. In a tunnel knife shield having a support frame, a plurality

of knives positioned side-by-side on the support frame, a plurality of double-acting hydraulic rams for advancing the knives and for causing the support frame to follow up the advance of the knives, the rams being positioned between the knives and the support frame, and each ram having first and second working chambers pressurization of which is effective to extend and retract that ram, an improved hydraulic control means for controlling the extension and retraction of the rams, the hydraulic control means comprising:

(a) a multi-flow pump and a plurality of control valves, each of which is associated with a respective hydraulic ram,

(b) each control valve including a first input and a second input,



(c) each of the first inputs is connected to a separate first hydraulic line, and each of the second inputs is connected to a common second hydraulic line,

(d) the common second hydraulic line being connected to a plurality of the first hydraulic lines, whereby when a given control valve is in a first operating position, the first working chamber of the associated ram is connected to the common second hydraulic line, and, when that valve is in a second operating position, the second working chamber of that ram is connected to the first hydraulic line associated with that control valve,

(e) the multi-flow pump supplies pressurized hydraulic fluid to all of the first hydraulic lines, the first hydraulic lines being supplied with equal amounts of pressurized hydraulic fluid via separate pump outlets.

4,439,064

TUNNEL FRAMINGS

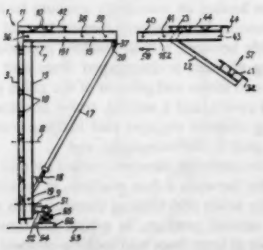
Cornelis van der Gaarden, Ysselstein, Netherlands, assignor to Outinord St. Amand S.A., Saint Amand les Eaux, France

Filed May 4, 1982, Ser. No. 374,898

Claims priority, application France, Apr. 28, 1981, 81 08825

Int. Cl.³ E21D *11/10*

U.S. Cl. 405—150 **8 Claims**



1. A half casing for tunnel framings for poured concrete, said half casing having a vertical panel supported by vertical beams, said vertical beams having upper and lower ends, a horizontal panel constituted of plural panel elements supported by horizontal beams, said horizontal beams having distal ends connected pivotally to the upper ends of the vertical beams, said vertical and horizontal panels forming a right-angled dihedron having an outer edge, and adjustable struts connecting the proximal ends of the horizontal beams to the lower ends of the vertical beams, characterized in that each half casing comprises

(a) horizontal beams composed of inner and outer telescopic beam sections, said inner beam sections being connected pivotally to the upper ends of the vertical beams and said outer beam sections including the proximal ends of the horizontal beams,

(b) a horizontal panel element supported on the inner telescopic beam sections, said horizontal panel element including the edge of the dihedron and having a width shorter than the length of said inner beam sections,

(c) a second horizontal panel element supported on the outer telescopic beam sections adjacent their proximal ends, said second panel element having a width shorter than the length of said outer beam sections, whereby a horizontal gap is provided between said two horizontal panel elements,

(d) connection means for connecting the inner and outer telescopic beam sections together at selected telescopic positions relative to each other, thereby to vary selectively the width of the gap between the two horizontal panel elements,

(e) a plurality of horizontal panel elements of modular widths for selected insertion into the gap to completely close the gap and

(f) a horizontal reinforcing beam affixed to the lower ends of the vertical beams for stiffening and supporting the vertical panel.

4,439,065

CONTINUOUS GALLERY CONSTRUCTION, IN PARTICULAR FOR UNDERGROUND MINE TUNNELS

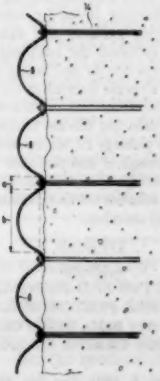
Artur Constapel, Wilhelmstrasse 140, 4100 Duisburg 17, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,602

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032521

Int. Cl.³ E21D *11/22*

U.S. Cl. 405—151 **11 Claims**



1. In a multi-section gallery construction for use in a mine tunnel, said gallery construction being of the type comprising a plurality of sheet steel elements disposed in partially overlapping relation to one another to provide a continuous longitudi-

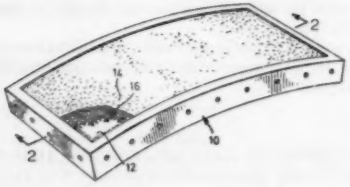
nally extending gallery in the mine tunnel, the improvement wherein each of said steel elements has a thickness in the range of 0.5 to 3 mm, each said element being of elongated arcuate shape and defining a plurality of spaced corrugations which are oriented in the longitudinal direction of said gallery, each said element having a cross-sectional shape in the longitudinal direction of said gallery consisting of a smoothly curved convex section the opposing edges of which merge into smoothly curved concave sections, the radii of curvature of said concave sections being substantially less than the radius of curvature of said convex section, adjacent ones of said steel elements overlapping one another in the longitudinal direction of said gallery only at said concave sections whereby said gallery exhibits a longitudinal cross section of smoothly curved wavy configuration consisting of plural convex sections and intervening smaller-radii concave sections, the amplitude (A) and longitudinal width (b) of each said concave section being substantially greater than the amplitude (B) and longitudinal width (a) of each said convex section, and supporting means in separable engagement with at least some of said overlapping concave sections for securing said gallery to a wall of the mine tunnel.

4,439,066

PERVIOUS TUNNEL LINER MEMBER

Michael P. McNally, R.R. #1, Freelton, Ontario, Canada L0R 1H0

Filed Mar. 19, 1982, Ser. No. 359,771
Int. Cl.³ E21D *11/00*
U.S. Cl. 405—153 **8 Claims**



1. A tunnel lining comprising a series of similarly shaped tunnel liner members each being of a similar geometric shape such that when assembled with one another they form a continuous tunnel lining, said members being curved to conform to the shape of the tunnel, said members having exposed exterior and interior surfaces, each member having an edge surface of substantial width extending inwardly substantially orthogonally from said exterior surface, and extending around the periphery thereof to facilitate the coupling of adjacent lining members, in the construction of said lining, at least a portion of said members having a recess formed in the exterior surface of said member, a suitable filter means located in said recess to allow the passage of selected filtrate therethrough, said filter means permitting the passage of water and air therethrough, but preventing the passage of soil particles therethrough, conduit means passing through said member serving to communicate the recess in the exterior surface of said member with the interior surface of said member.

4,439,067

METHOD OF LAYING AND JOINING PIPES AND A LIFTING DEVICE FOR PERFORMING THE METHOD

Thorleif Bakk, and Henry Bakk, both of Oslo, Norway, assignors to deha Baubedarf GmbH & Co. KG, Grossgerau, Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,567
Claims priority, application Norway, Nov. 10, 1980, 803374
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—154 **4 Claims**

1. A lifting and joining device for use in laying and joining pipes end to end, especially large concrete pipes, to form a pipeline of a plurality of pipes comprising, an asymmetrical lifting strap having at least two legs, a first leg being longer than the second leg, a lifting and connecting member interconnecting said legs at one end, and pipe attaching means on the other ends adapted to be attached to the pipes to be joined, so that

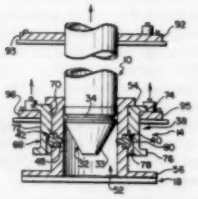
when said longer leg is attached to a pipe already laid and the shorter leg is attached to a pipe to be joined at a position closer to the end to be joined than the position where the longer end is connected to said laid pipe and a lifting force is applied to said lifting and connecting member, the pipe to be joined is drawn toward said laid pipe.

4,439,068

RELEASABLE GUIDE POST MOUNT AND METHOD FOR RECOVERING GUIDE POSTS BY REMOTE OPERATIONS

Roger L. Pokladnik, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Sep. 23, 1982, Ser. No. 422,091
Int. Cl.³ E02B *7/12*; F16L *35/00*
U.S. Cl. 405—169 **10 Claims**



1. In a guide system for an underwater well installation of the type comprising a base secured to an upstanding well member and at least one guideline to be secured to the base and to extend from the base to the surface of the body of water, the combination comprising:

a receptacle rigidly secured to the base and having an upwardly opening cavity;

a guide post having a lower end portion of shape and dimensions to be accommodated by said cavity, said lower end portion having an outwardly opening locking recess;

at least one locking element carried by said receptacle and movable between a first, inactive position, in which the locking element is disengaged from said locking recess when said lower end portion of the guide post is disposed in said cavity, and a second, active position, in which the locking element engages said locking recess to lock the guide post to the receptacle; and

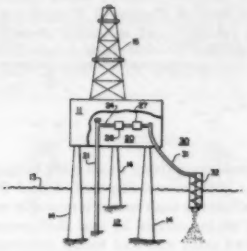
a movable operating member carried by said receptacle and movable between a first position, in which the operating member holds said locking element in its active position, and a second position, in which the movable operating member at least frees said locking element for movement to its inactive position, said operating member having externally exposed means for direct engagement by a remotely lowered and remotely operated tool.

4,439,069

METHOD AND APPARATUS FOR DISPOSING OF DRILL CUTTINGS AT AN OFFSHORE LOCATION

John Kelly, Jr., Arlington, Tex., and Gregory J. Edelbrock, Forus, Norway, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,856
Int. Cl.³ E02B 17/00; E21B 21/00
U.S. Cl. 405—195 1 Claim



1. A system for disposing of oil contaminanted drill cuttings from a drill platform of an offshore well drilling operation in which a drilling fluid is circulated to remove drill cuttings from the well being drilled, comprising:

(a) means for compacting said drill cuttings to minimize water pollution when said drill cuttings are discharged into the water surrounding the drill platform, and

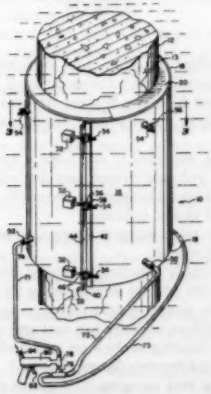
(b) a discharge member for conveying said drill cuttings from the drill platform into the water along a pathway which is straight running and inclined 45° to 60° from the vertical along at least a portion of its length whereby said discharged drill cuttings enter the water at a distance from the drill platform sufficient to eliminate impact of the discharged drill cuttings with the underwater support structure for the platform which could cause contamination in the water surrounding the drill platform.

4,439,070

METHOD FOR RESTORING AN UNDERWATER PILING AND AN UNDERWATER JACKET USED THEREWITH

Floyd E. Dimmick, 109 Brinker Rd., Barrington Hills, Ill. 60010

Filed Jul. 23, 1981, Ser. No. 285,964
Int. Cl.³ E02D 5/60
U.S. Cl. 405—216 46 Claims



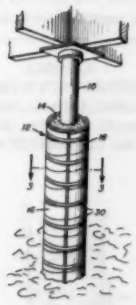
1. A method for restoring an underwater concrete, wood or steel piling or other underwater structure including the steps of: placing a sheet of plastic material around a portion of a piling to be restored with longitudinal edges of the sheet overlapping each other and with at least one strip of compressible material situated between the lower edge of the sheet and the piling; applying an epoxy composition either to the inner surface of the strip of compressible material and/or the adjacent piling; drawing the longitudinal edges of the sheet in further overlapping relationship; fixing the drawn together edges in place to form a jacket around the piling and to create an annular space between the piling and the jacket; injecting an epoxy composition into said annular space while at the same time venting said annular space in at least one location at the upper end of said annular space until said epoxy composition begins to escape from said at least one location at the upper end of said annular space.

4,439,071

PILING ENCASEMENT SYSTEM

Linwood W. Roper, Jr., Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Jan. 15, 1982, Ser. No. 340,002
Int. Cl.³ E02D 5/60
U.S. Cl. 405—216 7 Claims



1. For use in the formation of a reinforcing sleeve of concrete or the like about a pile, a mold for encircling a pile in outwardly spaced relation thereto, said mold comprising a first integral one-piece section of partial tubular configuration and an independent second integral one-piece section of partial tubular configuration, said first section extending about an arc of greater than 180° and having opposed longitudinal edges defining an opening of an arc of less than 180°, said second section extending about an arc greater than that of the opening for positioning over said opening, said first section including an outer surface, said second section terminating in opposed edges positioned in overlying relation to the outer surface of said first section circumferentially spaced from the opening beyond the opposed edges of the opening, the opposed edges of said second section being directly supported by said first section.

4,439,072

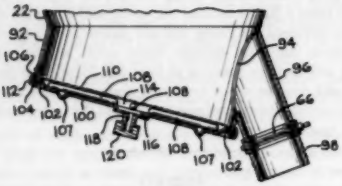
FLUIDIZED BED DISCHARGE BIN WITH AERATING BLOWER

James H. Goedken, Beatrice, Nebr., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed May 22, 1981, Ser. No. 266,032
Int. Cl.³ B65G 53/38
U.S. Cl. 406—91 4 Claims

4. In a fluidized bed discharge bin including an aerating blower the improvement comprising a removable closure covering an opening in the bottom of the bin, said closure including an imperforate wall portion having a generally flat planar interior surface on which the weight of overlying con-

tents of the bin is supported, and an air-permeable sheet within the bin overlying said generally flat interior surface of said imperforate wall portion and having a perimeter retentively held between said closure and said bin opening, spacing means within the bin disposed on said interior surface of said imperforate wall portion and engaging that side of said air-permeable sheet facing said interior surface to preclude the entirety of



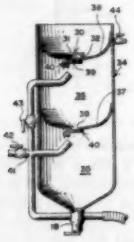
said air-permeable sheet from being pressed flat against said interior surface, and means for introducing aerating fluid from the blower into the bin via an inlet in said closure which is located immediately adjacent said imperforate wall portion, said inlet being located at a central region of said closure and said spacing means comprising a series of spacing elements circumferentially spaced and directed generally radially with respect to the central region of said closure.

4,439,073

FILLING HOLE SWING VALVE FOR SANDBLASTERS

Harold J. White, 820 NW. 144th St., Miami, Fla. 33168

Filed Apr. 30, 1982, Ser. No. 373,364
Int. Cl.³ B65G *53/40*
U.S. Cl. 406—125 **9 Claims**



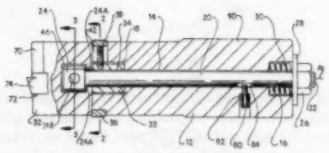
1. In a filling hole swing valve for sandblasters of the type having a sand holding and delivery chamber, a sand filling chamber above the sand holding and delivery chamber, an inverted head wall separating the sand holding and delivery chamber from the filling chamber, a circular sand filling hole centrally located in the head wall for the passage of sandblasting sand from the filling chamber into the sand holding and delivery chamber, and a pressurized air conduit extending into said sand holding and delivery chamber, the improvement comprising, in combination, a swing valve, means pivotally journalling said swing valve with respect to the underside of the head wall for movement between a downwardly-extending position away from the sand filling hole and an upward position in seating engagement against the underside of said filling hole and surrounding a peripheral head wall zone thereof, said swing valve comprising a flat metal plate, a flat elastic gasket secured against the upper side of said plate, said pivotally journalling means permitting limited translational movement of said plate in the vertical direction, the pressurized air conduit terminating within the sand holding and delivery chamber in abutment with the underside of said plate when said swing valve is in its downwardly-extending position.

4,439,074

BORING TOOL WITH COARSE AND FINE ADJUSTMENT

Shivdas A. Kalokhe, Clinton, Canada, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jun. 30, 1982, Ser. No. 393,915
Int. Cl.³ B23B *39/00*
U.S. Cl. 408—178 **12 Claims**



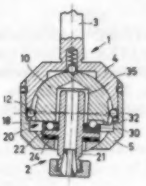
1. A boring tool comprising a tool body having a first longitudinal bore, a shaft means disposed in said first bore with clearance such that the shaft means is movable eccentrically in said bore, tool means carried by said shaft means, key means between the tool body and tool means permitting transverse movement of said tool means relative to said tool body, and bushing means rotatable in said first bore and having a second longitudinal bore offset therefrom with the shaft means received in said second bore and movable with said bushing means such that rotation of the bushing means causes the shaft means to move in an eccentric path in said first bore and impart a transverse movement to the tool means relative to the tool body for purposes of tool adjustment.

4,439,075

TOOLHOLDER FOR ROTARY TOOL

Hans Wiederkehr, Ifangstrasse 107, Rümlang, Switzerland

Filed Dec. 9, 1980, Ser. No. 216,314
Claims priority, application Switzerland, Dec. 10, 1979, 10930/79
Int. Cl.³ B23B *31/36*
U.S. Cl. 408—239 R **6 Claims**



1. A toolholder for rotary tool, comprising

a driving part having a casing coupled thereto;

a driven part having a bearing flange and mounting means for coupling a tool to said driven part along a tool axis; and

joint means, mounted in said casing, for coupling said driving part and said driven part for relative pivotal movement and lateral movement perpendicular to said tool axis, said joint means including:

means in said casing defining a substantially spherically shaped recess,

a substantially spherically shaped body mounted in said recess for pivotal movement to all sides,

means for coupling said recess to said body to transmit torque from said driving part and casing to said body;

a planar bearing surface on said body generally parallel with said bearing flange;

a bearing ring carrying a plurality of bearing balls and coupling balls; and

means in said bearing surface and in said bearing flange for

engaging said coupling balls for transmitting torque from said body to said driven part,

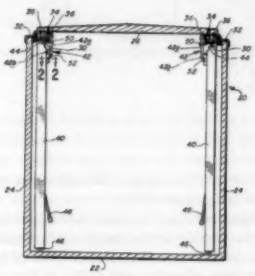
said bearing balls concurrently permitting relative lateral movement between said bearing surface and bearing flange.

4,439,076

MOVABLE FREIGHT RESTRAINING DEVICE FOR FREIGHT CARS AND THE LIKE

Russell M. Loomis, Palos Heights; Michael D. Gaikowski, Homewood, and Denis R. Brzezinski, Richton Park, all of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

Filed Apr. 1, 1981, Ser. No. 249,898
Int. Cl.³ B60P *7/14*; B61D *45/00*
U.S. Cl. 410—153 **38 Claims**



1. A device for restraining freight in a cargo area in a freight transporting vehicle, which vehicle has track means spaced inwardly of a side wall of the vehicle and extending along one side of at least a portion of the length of the cargo area in the top portion thereof, which comprises:

horizontal axle means positioned above said track means at right angles thereto, said axle means and any supporting structure therefor extending laterally beyond said track means on at least one side thereof;

an upright, elongated stanchion having a vertically extending cargo restraining surface on one side thereof substantially normal to said track means, said cargo restraining surface extending transversely for substantially less than one-half of the width of said cargo area;

roller means rotatably mounted on said axle means for rolling on said track means, said roller means being disposed along said axle means on both sides of the vertical plane that passes through the center of gravity of said stanchion and is parallel to said track means;

yoke means connected with said axle means and any supporting structure therefor at its upper end and connected with said stanchion at its lower end, to provide a support framework for said stanchion that is rigid throughout its entire extent, in a first vertical plane that passes through the center of gravity of the stanchion and is normal to said track means, from said roller means, along said axle means and any supporting structure, along said yoke means, and across said stanchion to a second vertical plane that passes through said center of gravity and is parallel to said track means,

the connection between said stanchion and said lower end of said yoke means, when said roller means includes more than one roller disposed in a given direction, being articulated in said given direction,

said stanchion being supported solely by said track means extending along said one side of said freight transporting vehicle; and

locking means for locking said stanchion in selected positions with respect to said cargo area.

31. In a device for restraining freight in a cargo area in a freight transporting vehicle, which device includes an upright stanchion suspended by means of a yoke member from a carriage for rolling along track means spaced inwardly of a side wall of the vehicle and extending along at least a portion of the length of the cargo area in the top portion thereof, said stanchion having a horizontal flat plate member secured thereto, said yoke member being a generally L-shaped member having a vertical arm and a horizontal arm extending towards the outer wall of said vehicle beneath said track means, the subcombination of means for connecting said stanchion and said yoke member, which comprises:

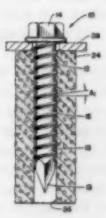
a horizontal shelf member supported on the free end of said horizontal arm of the yoke member, said shelf member having an upper, planar bearing surface, the vertical line on which the center of gravity of said stanchion lies, when the stanchion is supported by said yoke member, passing through said planar bearing surface, said shelf member being positioned to support said flat plate member secured to said stanchion, with said flat plate member being free to rock upon said shelf member in response to lateral or longitudinal displacement forces applied to the lower portions of said stanchion.

4,439,077

CONCRETE SCREW ANCHOR

Kent B. Godsted, 917 S. Allmen, Hinsdale, Ill. 60521

Filed Feb. 11, 1982, Ser. No. 347,809
Int. Cl.³ F16B *35/04*
U.S. Cl. 411—411 **5 Claims**



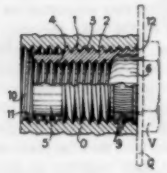
1. A screw type anchor for retention in a bore of predetermined diameter formed in a masonry type support surface in combination with said surface, the anchor including an axially extending shank with an enlarged head portion at one extremity and a support surface entering portion at the opposite extremity, the head portion including rotation inducing surfaces, a spaced, helical, continuous thread having a predetermined threads per inch and predetermined crest diameter formed on the shank and extending from the entering portion towards the enlarged head portion for a substantial portion of the length of the shank, the helical thread having a V-shaped cross-sectional configuration with the flanks of the thread intersecting at an included angle in the range of approximately 50°–65°, the helical thread extending about the shank at a lead angle in the range of approximately 6° to 8½°, the predetermined bore diameter is approximately equal to 0.9 the predetermined crest diameter of the anchor, so that the average penetration of the crest of the thread into the wall of the bore is approximately 0.05 the predetermined crest diameter, whereby the anchor can be threadingly inserted in said bore by cutting mating threads in the wall of the bore at an acceptable insertion torque level while optimizing the pull-out strength of the anchor in the support surface.

4,439,078

ASSEMBLY SLEEVE FOR FIXING A SCREW IN AN OBJECT, PARTICULARLY OF A SOFT MATERIAL

Alexis A. J. F. Dessouroux, Spa, Belgium, assignor to Shur-Lok International SA, Petit Rechain, Belgium

Continuation of Ser. No. 127,084, Mar. 4, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 351,892
Claims priority, application France, Mar. 15, 1979, 79 06611
Int. Cl.³ F16B 37/12
U.S. Cl. 411—178 6 Claims



1. In an insert sleeve for interposition between a screw and a tapped hole of an object, in particular of a soft material, said sleeve comprising an outer screwthread adapted to the screwthread of the tapped hole, an inner screwthread adapted to the screwthread of said screw, and a cylindrical extension portion adjacent an end of the sleeve, which extension portion is devoid of screwthreads and has an outside diameter which is no larger than the minor diameter of the outer screwthread of the sleeve, said extension portion comprising a ribbed outer cylindrical surface and provided for axial compression and buckling to produce a radially outward deformation against the screwthead of said tapped hole to prevent rotation of the sleeve; the improvement comprising means for facilitating and accelerating a disengagement of said ribbed outer surface from the screwthread of the tapped hole, subsequent to said outer deformation thereof, when it is desired to remove the sleeve from the tapped hole, said facilitating and accelerating means comprising an outer circular annular and smooth flange on an outer end of the extension portion, the annular flange having an outside diameter exceeding the minor diameter of the outer screwthread of the sleeve so as to be capable of axially bearing against said object and acting as an abutment which, when rotated relative to said object, is non-destructive of the material of said object and prevents further penetration of said outer end portion into the tapped hole when screwing the rest of the sleeve still further into the tapped hole in the conventional manner by means of a bolt or the like which is jammed in said inner screwthread of the sleeve for rotating the sleeve for disengaging said buckled ribbed outer surface from the screwthread of the tapped hole, the extension portion having an inside diameter larger than the major diameter of said inner screwthread, said outer flange constituting reinforcing means for said outer end which facilitate the production of said outer deformation by an axial compression and buckling on said extension portion merely by application of axial force on said flange.

4,439,079

WALL ANCHOR ASSEMBLY

Al Losada, 30 Stag St., Stratford, Conn. 06497

Filed Jul. 24, 1981, Ser. No. 286,581
Int. Cl.³ F16B 21/00, 13/06
U.S. Cl. 411—345 9 Claims

1. An anchoring device for use in a wall to support a fixture thereon comprising:

an elongated anchor means sized to fit through an opening formed in a wall,

said anchor means having an opening formed therein adapted to receive a fastener,

a pair of elongated leg members hingedly connected to said anchor means, said leg members being disposed to either side of said opening,

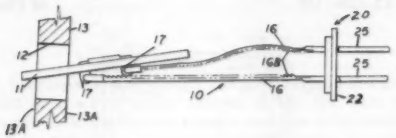
ratchet teeth longitudinally spaced along the length of at least one of said leg members,

a releasable slip collar arranged to be slidably mounted along said leg members,

said collar having a central opening adapted to be disposed in alignment with the opening in said anchoring means,

said collar having opposed slideways for receiving said leg members, and

said slideways each having opposed closed ends confined within the periphery of said collar, the distance between said closed ends defining the width of said slideways, and



said slideways having a width which is greater that the width of said leg members,

said collar being arranged to slide along said leg members,

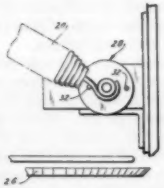
a complimentary tooth formed in at least one of said slideways adapted to ratchet over the ratchet teeth of the corresponding leg member whereby said collar is free to ratcher over said ratchet teeth in one direction only, and whereby the width of said slideway relative to its corresponding leg member permits said collar and leg members to be shifted relative to one another so as to affect disengagement of the complimentary tooth of the slideway from the associated ratchet teeth of the corresponding leg member so that said collar is rendered freely slidable along said leg members independently of any ratcheting.

4,439,080

BINDER CLAMP SPRING SAFETY DEVICE

Robert E. LeFevere, Memphis, Tenn., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 28, 1982, Ser. No. 372,505
Int. Cl.³ B42B 9/00
U.S. Cl. 412—9 1 Claim



1. A binder clamp spring safety device for restraining a segment of a failed binding machine clamp spring in combination with a binding machine comprising a cutting and roughing saw, a clamp plate and a curved plate spaced from said saw, a clamp carrier cam spaced from said clamp plate, a shaft bushing block secured to said curved plate, a shaft protruding from said block, a clamp locking mechanism spring having one end thereof secured to said protruding shaft, a collar connected to said shaft and interposed between said bushing block and said spring, and a pair of pins protruding from said collar each on an opposite side of said spring to retain said spring therebetween in order to prevent said spring from engaging said saw or said clamp carrier cam.

4,439,081

CONTAINER PRODUCED BY TRIPLE DRAWN METHOD USING TIN COATED STEEL

Albert J. Holk, Frankfort, and Sam C. Pulciani, Norridge, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Jun. 26, 1979, Ser. No. 52,176
Int. Cl.³ B21D *51/26*
U.S. Cl. 413—1 8 Claims

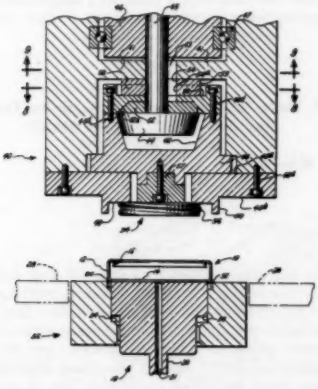
1. In the method of forming a can including a body and an integral end wherein a steel sheet blank is first drawn to form a large diameter shallow cup, then redrawn to form a deeper smaller diameter cup, and thereafter redrawn to the final can body diameter; the improvement of starting with a tin coated steel sheet wherein the steel sheet prior to coating has a surface finish on the order of 30 microinch maximum.

4,439,082

APPARATUS FOR THREADING CLOSURES

Roderick V. King, Girard, Pa., assignor to Ethyl Products Company, Richmond, Va.

Division of Ser. No. 200,909, Oct. 27, 1980, Pat. No. 4,397,597. This application Jul. 23, 1982, Ser. No. 401,203
Int. Cl.³ B21D *51/00*
U.S. Cl. 413—56 11 Claims



1. An apparatus for forming spiral threads in a closure having a cylindrical wall comprising:

(a) an apparatus support means;

(b) nest means attached to said support means for receiving said closure;

(c) closure support means slidable received in said nest means for moving said closure into and out of said nest means;

(d) cylindrical threading tool means having at least one outwardly extending spiral thread forming member around the outside thereof;

(e) means for vertically inserting and withdrawing said threading means in said closure;

(f) threading tool housing means axially aligned with said nest means and having threading tool carrier means mounted therein that is connected to said threading tool means, said carrier means including a carrier having a conical recess that has the shape of an inverted truncated cone located in its interior, and a truncated conical actuator adapted to slide into and out of said recess to move said threading tool carrier transversely to bring said threading tool means into contact with said cylindrical wall of said closure; and

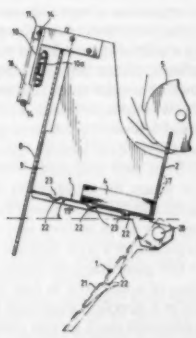
(g) orbiting means for moving said threading tool means in an orbital path whereby the axis of said threading tool moves in a circle about the axis of said closure while preventing rotational and axial movement of said threading tool about its own axis.

4,439,083

AUTOMATIC SHEET DISPENSING APPARATUS

Stuart M. Jenkins, Bognor Regis, and Steven M. Hosking, Southsea, both of England, assignors to De La Rue Systems Limited, London, England

PCT No. PCT/GB81/00219, § 371 Date May 28, 1982, § 102(e) Date May 28, 1982, PCT Pub. No. WO82/01435, PCT Pub. Date Apr. 29, 1982
PCT Filed Oct. 8, 1981, Ser. No. 385,401
Claims priority, application United Kingdom, Oct. 10, 1980, 8032851
Int. Cl.³ B65H *33/00, 31/30*
U.S. Cl. 414—46 9 Claims



1. An automatic sheet dispensing apparatus, comprising: means for feeding sheets singly to form a stack, and a dispensing module for conveying the stack to a selected one of two presentation platforms, the dispensing module comprising an elongated base plate (1) defining the presentation platforms and inclined to the horizontal, an upwardly extending support plate (2) along a lower lateral edge of the base plate in a plane at right angles to the base plate, a movable pusher plate (9) disposed adjacent to and at right angles to the base plate and to the support plate and mounted (at 10) to traverse in the direction of the length of the base plate, and means (14 to 18) to drive the pusher plate between two positions intermediate the ends of the base plate, the feeding means being arranged (at 5) to deliver a stack of sheets (4) onto a receiving platform (21) of the base plate lying between the two presentation platforms with the sheets lying in superimposition parallel to the base plate, the dispensing apparatus characterized in that the base plate (1) has fixed end sections terminating in the presentation platforms and a downwardly pivotable middle section which constitutes the receiving platform (21) of the base plate to allow a faulty stack of sheets thereon to be dumped, and in that there is at least one straight continuous longitudinal channel

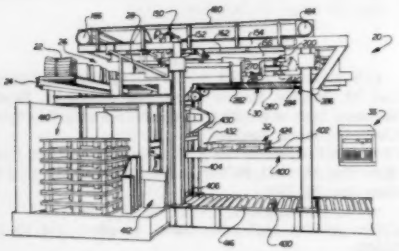
(22) extending along all three platforms of the base plate and at least one projection (23) on a lower edge of the pusher plate which mates with and runs in said channel to reduce the risk of dispensed sheets sliding under the pusher plate as it traverses the base plate.

4,439,084

PALLETIZER FOR NEWSPAPER BUNDLES

James S. Werkheiser, Nazareth, Pa., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Dec. 30, 1981, Ser. No. 335,839
Int. Cl.³ B65G 57/06
U.S. Cl. 414—62 **18 Claims**



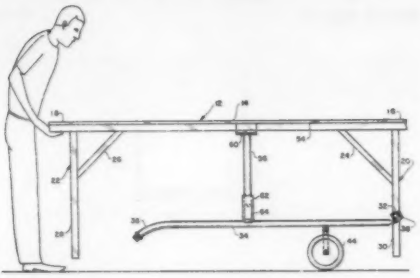
1. An apparatus for loading layers of articles to form a stack on a pallet, said apparatus comprising means defining a row staging area in which a stream of articles is formed into rows, each row having a pair of opposed side surfaces and a pair of opposed end surfaces, means defining a layer staging area for receiving the rows of articles from said row staging area and for forming said rows into layers, each layer including a plurality of rows disposed in a side by side arrangement, floor means for supporting said layer over a pallet, means for withdrawing said floor means from over said pallet to drop said layer onto said pallet, guide means for compacting the arrangement of articles in said layer and for maintaining the compact arrangement of said layer as it drops to form said stack on said pallet, said guide means including a layer register stop having surface means defining a first plane disposed vertically for engagement with a side surface of a first row in said layer to limit movement of said layer in a direction transverse to said first plane as said layer drops onto said stack on said pallet, and blade means including surface means defining a second plane generally parallel with said first plane for engaging a side surface of a last row of said layer to limit movement of said layer in a direction transverse to said second plane as said layer drops to form said stack on said pallet, and control means for forming complete rows having a predetermined number of articles in each of said complete rows and for forming complete layers having a predetermined number of complete rows in each of said complete layers, for forming a partial layer having fewer articles than the number of articles in said complete layers, and said guide means including means for guiding said partial layer to drop onto said stack on said pallet, said means for guiding said partial layer to drop onto said stack on said pallet including offsetting means for guiding said partial layer to drop onto said stack on said pallet at a location offset inwardly from an edge of said stack on said pallet, said layer register stop being movable and said offsetting means including means for moving said layer register stop between a location in which said first plane defined by said surface means of said layer register stop is vertically aligned with an edge of said pallet and a location offset inwardly from said edge of said pallet toward the center of said pallet.

4,439,085

HANDCART FOR BANQUET TABLES

Thomas A. Rodriguez, 203 Chapel Dr., and Angelo J. Zavaglia, 809 St. Clair, both of Collinsville, Ill. 62234

Filed Oct. 26, 1981, Ser. No. 314,653
Int. Cl.³ B62B 1/12, 1/14
U.S. Cl. 414—447 **7 Claims**



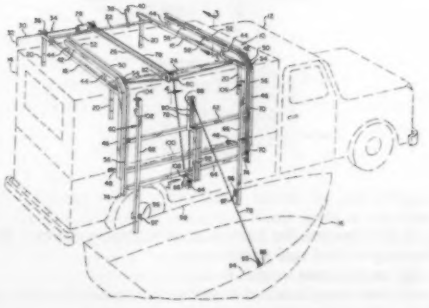
1. A handcart for banquet tables or the like having a flat table surface and at least one set of an end pair of table legs supporting said table surface in which said pair of table legs are braced by a horizontal leg brace spaced above the bottom of said legs and extending therebetween, said handcart being comprised of an elongated shaft having a handle portion at one end and a leg brace engaging portion at an opposite end, a pair of floor engaging wheels rotatably supported by said shaft intermediate said ends and table engaging support means connected to said shaft, said table engaging support means being comprised of a rigid member having one end connected to said shaft and an opposite end engageable with a under surface of the table in supporting relation thereto, said rigid member being relatively moveable with respect to said shaft into and out of engagement with said under surface of the table and said leg brace engaging portion being comprised of a rigid transverse cradle member which receives a major portion of the horizontal leg brace in cradled relation.

4,439,086

BOAT LOADER

Ralph W. Thede, 735 Edgewater St. NW., Salem, Oreg. 97304

Filed Jul. 1, 1982, Ser. No. 394,270
Int. Cl.³ B60R 9/04
U.S. Cl. 414—462 **10 Claims**



1. A boat loader for moving a boat between an upright position adjacent a vehicle on which said boat loader is mounted and an inverted position atop said vehicle, and for thereafter supporting the boat during travel of the vehicle, the boat loader comprising:

(a) a frame adapted for being mounted on a vehicle;

(b) a pair of tracks having respective downwardly depending and horizontal portions joined by respective arcuate portions, said pair of tracks being mounted parallel with each other on said frame;

(c) a carriage mounted on said pair of tracks, said carriage including a pair of generally parallel apart-spaced longitudinal rail members, each extending between said tracks, each longitudinal rail member having a pair of opposite ends and means associated with each of said opposite ends for movably engaging a respective one of said tracks and guiding said carriage therealong between a lowered position on said downwardly depending portions of said tracks and a raised position on said horizontal portions of said tracks, said carriage further including a pair of parallel transverse central carriage members spaced apart from each other and fixedly attached transversely across said longitudinal rails at a central location therealong;

(d) guide means associated with said frame and said carriage for guiding an elongate flexible tension-supporting member, said guide means including an upper sheave and a lower sheave each rotatably mounted between and supported by said transverse central carriage members;

(e) an elongate flexible tension-supporting member extending through said guide means and having an attached end and a free end;

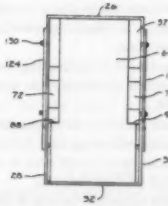
(f) means associated with said attached end of said elongate flexible tension-supporting member for retracting and extending it for raising and lowering said carriage along said tracks between said lowered position and said raised position, said elongate flexible tension-supporting member extending from said means for retracting and extending, further extending downwardly and around said lower sheave, thence upward, thence around said upper sheave and to an object to be lifted, when said carriage is in said lowered position.

4,439,087

STOCK RACK AND LOADING CHUTE FOR TRUCKS

Dave K. Schink, Rte. 3, Box 676, Union, Mo. 63084

Filed Feb. 20, 1981, Ser. No. 236,334
Int. Cl.³ B60P *1/00, 1/64*
U.S. Cl. 414—537 **11 Claims**



1. A stock rack for pick-up trucks and the like, said rack comprising a front rack wall member, a pair of side rack walls and a rear rack wall, said rear rack wall having a left hand and right hand section spaced from one another to define a central opening receiving a gate means, said means being comprised of a pair of laterally positioned gate members, pivot means supporting each of said gate members for swinging movement inwardly and outwardly of said truck and means for raising and lowering said gate members in the closed position, each of said gate members being hinged to a frame member slidably receivable in a vertical track member connected to each of said left hand and right hand rear wall sections, said frame member completely framing the hinged gate members and being vertically moveable with the gate members as a unit.

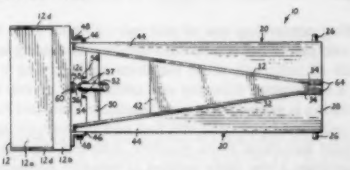
7. A stock rack for pick-up trucks and the like, said rack comprising a front rack wall member, a pair of side rack walls and a rear rack wall, said rear rack wall having a left hand and right hand section spaced from one another to define a central opening receiving a gate means, a raised planiform stock supporting bed supported by support frame means upon and substantially extending over a flat bed of said truck, said support frame means being connected to the front and rear walls of said stock rack in order that the rack, support means and raised bed may be installed or removed as an integral unit, said support frame means including a pair of longitudinally extending guide members defining with said truck flat bed and said separate raised bed a storage compartment for a ramp of a stock loading chute, said ramp being slidably receivable within said compartment and having pivot means when retracted from said compartment for pivoting a forward end to said support frame means, said chute ramp having a rear end adapted to be lowered when the chute ramp is retracted by pivoting said ramp about said pivot means, and side stock restraining members removably receivable by said chute ramp in the retracted position to provide a livestock chute.

4,439,088

BUCKET ATTACHMENT FOR TRACTORS

Gareth Summa, Platte County, Mo., assignor to Summa-Rise, Denver, Mo.

Filed Jul. 27, 1982, Ser. No. 394,646
Int. Cl.³ B66C *23/36*
U.S. Cl. 414—703 **10 Claims**



1. A frame structure for attaching an implement such as a bucket to a three-point tractor hitch having a pair of draft links and a third hitch point, said frame structure comprising:

a pair of rigid beams each having a back end portion providing an arm pivotally coupled with the implement in a manner permitting horizontal pivot axis, said beams having front end portions adapted to be pivotally coupled with the draft links of the tractor hitch;

power means for effecting pivotal movement of the implement about said pivot axis;

a side plate on each beam forming the outside surface thereof;

a top plate of each beam inclining upwardly and inwardly from the corresponding side plate, each top plate being tapered from front to back;

a rib extending generally upwardly from each top plate, said ribs being tapered from front to back and having spaced apart front end portions adapted to be pivotally coupled with the third hitch point of the tractor hitch;

a connecting plate rigidly interconnecting said beams at a location above said side plates, said connecting plate beig tapered from back to front; and

a cross brace extending between said side plates of the beams.

4,439,089

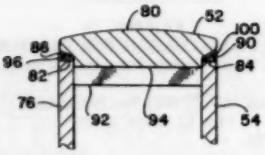
BOOM ARM WITH ROCK DEFLECTION FEATURE

Rodney H. Anderson, Libertyville, and Thomas M. Cameron, Waukegan, both of Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 950,937, Oct. 12, 1978, abandoned. This application Jun. 3, 1981, Ser. No. 270,171
Int. Cl.³ B66C *23/00;* E02F *3/76;* E04C *3/30*
U.S. Cl. 414—722 **1 Claim**

1. A boom arm assembly for use on a loader vehicle having a pair of boom arms; each boom arm having a first sidewall having a curvilinear upper edge and a lower edge, a second sidewall having an upper curvilinear edge and a lower edge disposed in a spaced apart parallel manner with said first sidewall, said first and second sidewalls being flat plates having

upper and lower edges straight cut such that each edge presents surfaces perpendicular to a surface of said flat plates; a pair of bottom plates identified as forward and rear bottom plates, each welded to said lower edge of said first and second sidewalls to join them together; a first and a second boom arm end, one boom arm end welded to each respective end of said boom arm, each boom arm end being a casting formed with a sidewall contacting portion forming a weld bed and each boom arm end having a through bore; a boom pocket casting formed with a sidewall contacting portion forming a weld bed welded to said lower edge of said first and second sidewalls between said forward and said rear bottom plates, said boom pocket casting having a through bore defining a centerpoint; a torque



tube casting connecting one of said pair of boom arms to the other of said pair of boom arms said torque tube casting including a pair of bellcrank pivot members each having a bore defining a centerpoint whereby said centerpoint of said boom pocket casting is generally an equal distance from said centerpoint of said first boom arm end and said centerpoint of said bore of said bellcrank pivot member; wherein the improvement comprises a top plate welded in position between said curvilinear upper edges of said first and second sidewalls to join them together, said top plate having a transverse cross sectional shape that has a flat inboard surface and an arcuate outboard surface and edges that are stepped down from the outboard to the inboard surface of said top plate.

4,439,090

WORKPIECE HANDLING APPARATUS

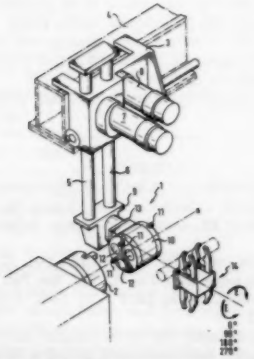
Wolfgang Schaefer, Isernhagen, Fed. Rep. of Germany, assignor to Gildemeister AG, Bielefeld, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,661

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043687

Int. Cl.³ B23Q 7/04

U.S. Cl. 414—736 **13 Claims**



1. A workpiece handling apparatus comprising:

a support arm with a workpiece gripper mounting surface;

a detachable workpiece gripper with a mounting surface for mating engagement with said gripper mounting surface;

a movable workpiece gripping element carried by said workpiece gripper;

urging means connected with said workpiece gripping element for holding the gripping element in one position;

a piston and cylinder actuator carried by said support arm having a piston rod operable to bridge the mating mounting surfaces and to operably engage the said workpiece gripping element, the piston being operable to move the piston rod in one direction to move the workpiece gripping element from said one position to a second position against the urging of the urging means, said piston rod being retractable beyond said mating mounting surfaces so that the workpiece gripper may readily be rotated relative to said support arm and may readily be detached from the support arm and another workpiece gripper substituted therefor.

4,439,091

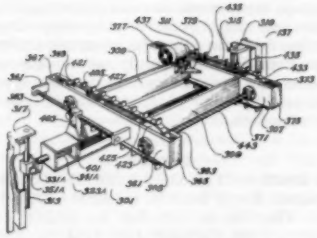
PIPE FEEDING SYSTEM

Robert Frias, Odessa, Tex., assignor to Ingram Corporation, New Orleans, La.

Filed Feb. 27, 1980, Ser. No. 125,160

Int. Cl.³ E21B 19/04

U.S. Cl. 414—745 **13 Claims**



1. A device for moving lengths of pipe off of or onto rows of stacked pipe comprising:

a pair of stanchions secured in place in spaced relation, said stanchions defining a plane generally parallel to the lengths of stacked pipe,

a horizontal beam member extending between said stanchions and connected at either ends to said stanchions by connecting means,

said horizontal beam member having a longitudinal axis,

said connecting means allowing said horizontal beam member to have vertical movement and to turn about an axis extending between said stanchions,

said horizontal beam member having a length shorter than the distance between said stanchions,

a rod means having said turning axis extending axially from the ends of said horizontal beam member to said connecting means,

a frame structure mounted to said horizontal beam member by mounting means,

said mounting means allows said frame structure to be moved in a direction generally perpendicular to said longitudinal axis of said horizontal beam member,

a pair of endless belt means attached to said frame structure, positioned generally perpendicular to said plane and adapted to rest across at least a portion of a row of pipe,

said mounting means being independent of said endless belt means,

a feet means attached to each said endless belt means and adapted to engage the pipe on which said endless belt means is positioned and to move the pipe toward or away from said pair of stanchions, and

a drive means for driving said pair of endless belt means in unison in first or second directions for moving the pipe on

which said pair of endless belt means rests toward or away from said pair of stanchions.

4,439,092

APPARATUS FOR UNLOADING WORKPIECE FROM PRESS

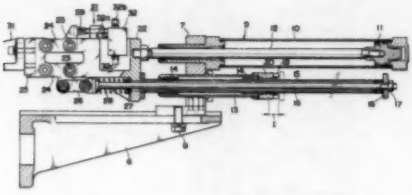
Yasuo Ajisaka, Kawasaki, Japan, assignor to Kabushiki Kaisha Orii Jidoki Seisakusho, Japan

Filed Mar. 2, 1982, Ser. No. 354,022

Claims priority, application Japan, Nov. 17, 1981, 56-171206[U]

Int. Cl.³ B65G *65/00*

U.S. Cl. 414—752 **3 Claims**



1. Apparatus for unloading a workpiece from a press includig a die and a bolster, which apparatus comprises:

(a) a power cylinder mounted on the bolster and having a piston rod horizontally movable along its axis toward and away from the die on which the workpiece is placed;

(b) an operating rod mounted on the bolster in parallel relation to said piston rod and movable along its axis, the stroke of said operating rod being shorter than the stroke of said piston rod;

(c) a linkage means attached to the forward ends of said piston rod and operating rod so that said operating rod is moved horizontally together with said piston rod during its stroke, said linkage means having a forward end which is vertically moved toward and away from the die upon the horizontal movement of said piston rod relative to said operating rod at a final portion of the extending stroke thereof and at an initial portion of the retracting stroke thereof; and

(d) a suction means mounted on the forward end of said linkage means, said suction being operable to hold the workpiece on the die when said forward end is moved vertically toward the die.

4,439,093

CARTON HANDLING SYSTEM

Robert W. Victorino, Salinas, Calif., assignor to Growers Vacuum Cool Company, Salinas, Calif.

Continuation of Ser. No. 139,865, Apr. 14, 1980, abandoned. This application Jul. 19, 1980, Ser. No. 399,437

Int. Cl.³ B65G *59/08, 67/04*

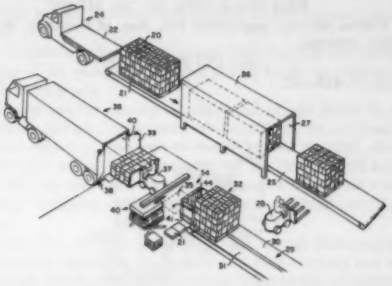
U.S. Cl. 414—786 **9 Claims**

5. A method for handling pallets with cartons thereon and loading the cartons into a vehicle having side walls and wherein each carton includes planar semi-rigid side and end walls and a top and bottom, said method comprising the steps of:

placing the pallets and cartons on a carton rotator and rotating the pallets and cartons from a first position approximately ninety degrees to shift the carton load off the pallet and rotate the cartons to a second position onto a second base;

squeezing the carton stack on the pallet while the pallet is rotated to hold the carton load together and to align the cartons and reduce the size of the stack by moving pressure plates into contact with two opposite sides of said carton stack and applying sufficient pressure to reduce the size of said carton stack sufficiently to fit within a vehicle;

removing the pressure plates from contact with the carton stack, and



removing the carton stack from the carton rotator and moving it into the transport vehicle to allow the cartons to relax and expand to engage the vehicle side walls.

4,439,094

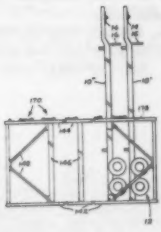
METHOD FOR STORING WHEELED FRAMES OF DETACHABLE CARGO CONTAINER TYPE TRAILERS

Joseph L. Riley, Milwaukie, Oreg., assignor to Scott S. Corbett, Jr. and Lyna F. Perrott, both of Portland, Oreg.

Division of Ser. No. 69,563, Aug. 24, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,747

Int. Cl.³ A45F *3/10*

U.S. Cl. 414—786 **5 Claims**



1. The method of storing the empty elongated wheeled frame of a trailer of the detachable cargo container type wherein the trailer frame has a top trailer-supporting surface and an opposite bottom surface and laterally spaced longitudinal sides and the wheels are mounted on the frame adjacent the rear end thereof, the method comprising:

(a) uncoupling said trailer frame from a powered tractor,

(b) gripping the trailer frame between the said top and bottom surfaces at least in areas adjacent both laterally spaced sides of the frame and forwardly of the wheels as the frame is supported on the ground in substantially horizontal position,

(c) lifting the frame above the ground,

(d) rotating the lifted frame to substantially vertically extending position with the rear end facing downward,

(e) moving the vertically extending frame to a storage site, and

(f) supporting the frame removably in stationary storage in said substantially vertically extending position.

4,439,095

COMBUSTION AIR FAN

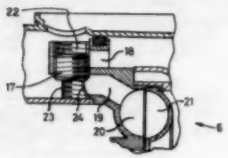
Rüdiger Galtz, Munich, and Rudolf Reinhardt, Krailling, both of Fed. Rep. of Germany, assignors to Webasto-Werk W. Baier GmbH & Co., Gauting, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,186

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209904

Int. Cl.³ F01D *17/00*

U.S. Cl. 415—52 **9 Claims**



1. A fan of the type for conveying combustion air to the burner of a motor vehicle heating system, comprising a housing, an impeller in said housing, an intake duct for delivery of air to said impeller and a discharge exit for the conveyance of air from said impeller, wherein an outlet by-pass duct is connected in by-passing relationship with respect to the discharge exit of the fan and is provided with an adjustable throttling member, whereby the output of the fan may be adjusted, wherein the throttling member is an adjusting screw which controls the flow cross section of the by-pass duct, projects into the intake duct, and is operable for controlling of the flow cross section of the intake duct in a manner opposite to its controlling of the cross section of the by-pass duct.

4,439,096

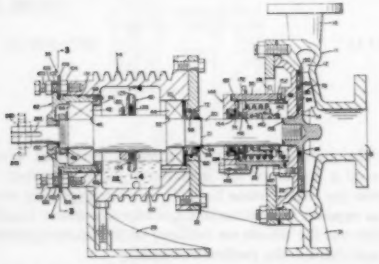
IMPELLER ADJUSTER FOR CENTRIFUGAL PUMP

Robert E. Rockwood, Windham, and Richard P. Antkowiak, Hampstead, both of N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.

Division of Ser. No. 408,043, Aug. 13, 1982. This application Sep. 20, 1982, Ser. No. 419,994

Int. Cl.³ F01D *7/00*

U.S. Cl. 415—131 **4 Claims**



1. A centrifugal pump comprising a bladed impeller in a stationary pump housing, the leading edges of said blades being adjacent a first radially extending wall of said housing, a rotatable shaft on which said impeller is mounted, a shaft support for rotatably holding the end of said shaft which is opposite said impeller, and adjustable fastening means for connecting said shaft support to a stationary member, said impeller, shaft and shaft support together being adapted for axial adjustment upon axial adjustment of said fastening means, said fastening means comprising at least two threaded bolts projecting from said stationary member in a direction parallel to the axis of said shaft, and reference nuts for fixing the position of said shaft support on said bolts, said reference nuts having marks at regular angular intervals, and at least one reference mark on said shaft support adjacent each reference nut cooperating with said marks on said reference nuts for indicating the axial position of said impeller with respect to said pump housing.

4,439,097

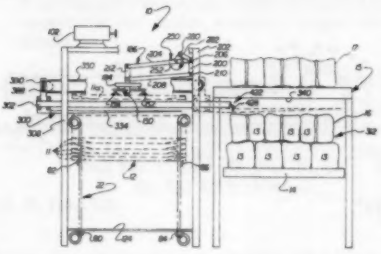
SEPARATOR SHEET FEEDER

Henry R. Mebus, Nazareth, Pa., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Dec. 7, 1981, Ser. No. 327,901

Int. Cl.³ B65H *5/08, 33/02*

U.S. Cl. 414—42 **6 Claims**



3. An apparatus for feeding a separator sheet onto a layer of newspaper bundles on a pallet, said apparatus comprising a frame, elevator means for supporting a stack of nested separator sheets in said frame, suction means for lifting the top separator sheet from said stack of nested separator sheets, carriage means laterally reciprocatable from a first position for receiving said one lifted separator sheet from said suction means to a second position above said layer of newspaper bundles on said pallet, and means for holding a separator sheet moved by said carriage means to said second position against lateral movement when said carriage means returns from said second position to said first position, said suction means including at least one suction cup, linkage means connected with said frame and said suction cup for moving said suction cup in a generally vertical path between a lower position in which said suction cup engages said top separator sheet of said stack of nested separator sheets and an upper position above said stack of nested separator sheets, said linkage means including a four-bar linkage, and said apparatus further including a cam, a cam follower disposed in engagement with said cam and connected with said linkage means, drive means for effecting relative movement between said cam and said cam follower to effect movement of said linkage, and a lost motion connection between said cam follower and said four-bar linkage.

4,439,098

FRAME-HANDLING-AND-STACKING APPARATUS

Bert J. Rienks, Redlands, Calif., assignor to Robert L. Bauer, Westminster and Richard Upthegrove, Huntington Beach, both of, Calif.

Filed Sep. 28, 1979, Ser. No. 79,947

Int. Cl.³ B65G *57/00*

U.S. Cl. 414—43 **13 Claims**

1. A handling-and-stacking apparatus for wooden frames and like structures, comprising:

a base-support structure;

a pair of tiltable truss units pivotally attached to said base-support structure, said truss units being positioned opposite and parallel to each along said base structure;

wherein each of said truss units comprises:

a front, vertical girder member;

a rear, vertical girder member; and

a longitudinal bar member interconnecting said front and rear girder members, whereby said front and rear girders

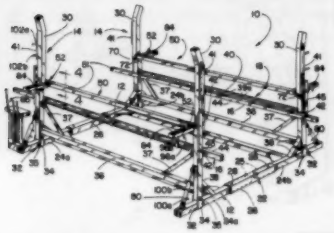
move together from a vertical position to an angular tilted position;

means for pivotally mounting said truss units to said base structure so as to be tilted outwardly thereof;

conveyance means mounted between said truss units and adapted to receive a frame structure thereon for locating said frame structure between said truss members;

carriage means operably mounted to said truss units and adapted to be moved vertically upward and downward from said truss units while carrying said frame structure thereon;

wherein said carriage means comprises:



an elongated sill member positioned longitudinally from said front girder member to said rear girder member, and positioned below said conveyance means;

a pair of arm members secured to said sill member, each arm member being slidably supported in respective front and rear girder members;

a rack assembly mounted to said truss units and positioned above said carriage means, in order to receive a frame structure from said carriage means and support said frame structure thereon; and

a power-operating system operably connected to said truss units, said carriage means and said rack assembly.

4,439,099

APPARATUS FOR STACKING ELONGATED MATERIALS

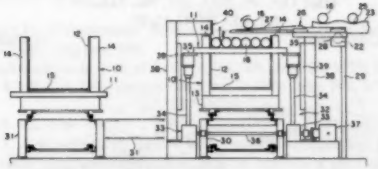
Akira Asari, Osaka; Tatsuhiko Noyori, Kobe; Takahisa Tabuchi, Kobe; Munenori Soejima, Kobe, and Tetsuya Miyauchi, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 2, 1981, Ser. No. 269,758

Claims priority, application Japan, Jun. 4, 1980, 55-76196

Int. Cl.³ B65G *57/10*

U.S. Cl. 414—45 **5 Claims**



1. An apparatus for horizontally stacking elongated material of uniform shape and circular cross-section, said apparatus comprising:

(a) a load-carrying bed having a substantially horizontal, sectionally U-shaped receptacle channel for stacking elongated material therein, said load-carrying bed comprising a plurality of pairs of upright beams positioned opposite one another along the length axis of the receptacle channel, each of said upright beams having a flange extending perpendicularly away from the length axis of the receptacle channel;

(b) a feeder for sequentially feeding the elongated material to said load-carrying bed such that the longitudinal axis of the elongated material is substantially parallel to the length axis of the receptacle channel in said load-carrying bed;

(c) a transfer mechanism for sequentially feeding individual units of the elongated material to said feeder at predetermined intervals;

(d) first means for moving the distal end of said feeder by a distance which corresponds substantially to the cross-sectional width of one unit of the elongated material after each unit of the elongated material has dropped off said feeder into said load-carrying bed until a horizontal row of the elongated material has built up in said load-carrying bed;

(e) a plurality of support beams which extend horizontally across the receptacle channel in said load-carrying bed to support the elongated material being fed to the receptacle channel at longitudinally spaced positions on opposite sides of the center of gravity of the elongated material, each of said plurality of support beams having a pair of locking members which are sized, shaped, and positioned to slide vertically along said flanges on an associated one of said plurality of pairs of upright beams, said locking members functioning to completely block movement of said support beams in the horizontal direction; and

(f) second means for moving said support beams downwardly by a distance which corresponds substantially to the cross-sectional height of the unit of elongated material after each horizontal row of the elongated material has dropped off said feeder into said load-carrying bed.

4,439,100

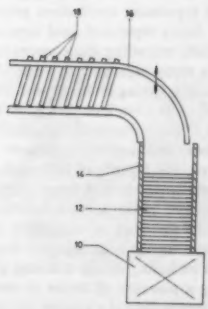
DEVICE FOR SEPARATING AND TAKING OFF OF SHEETS FROM A STACK

Karl-Heinz Fichtner, Von Eiff Str. 11, 6450 Hanau am Main 7; Willi Kramer, Schlesienring 20, 6368 Bad Vilbel 2, and Willi Muskulus, An der Pfaffenmauer 17, 6000 Frankfurt am Main 60, all of Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,101

Int. Cl.³ B65G *59/06*

U.S. Cl. 414—115 **15 Claims**



1. A device for the separating and taking off of one or more notched stamped sheets from a stack of sheets comprising:

a magazine for receiving the stack of notched stamped sheets; and

a tool operatively disposed adjacent said magazine comprising first and second tool parts which are movable relative to one another;

said first tool part including a first surface for engaging the notched sheets to cause the sheets to slide on one another in the plane of separation of the stack, the sliding move-

ment of the sheets being of a limited distance such that the sheets do not come into engagement in the region of the notches;

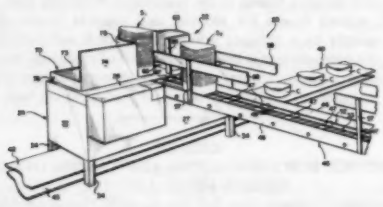
at least one of said first and second tool parts including a second surface for engaging and applying pressure against at least one location of the sheets which is exposed during the relative sliding movement between sliding sheets so that the sliding sheets are separated from one another in a direction normal to the plane of separation, and such that thereafter a relative transverse movement between the sliding sheets can take place without danger of catching.

4,439,101

APPARATUS FOR SEPARATING NESTED CUP-SHAPED CONTAINERS

Gerald J. Orlowski, Scottsdale, Ariz., and Robert S. Adamson, Englewood, Colo., assignors to Armour Food Company, Phoenix, Ariz.

Filed Jul. 26, 1982, Ser. No. 401,802
Int. Cl.³ B65G 59/06
U.S. Cl. 414—126 **5 Claims**



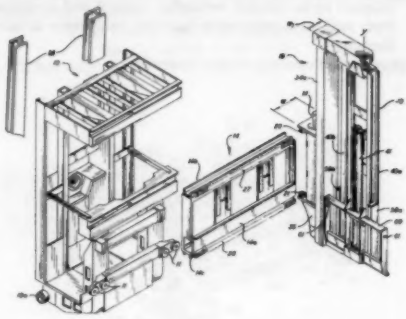
1. Apparatus for continuously separating cup-shaped containers from a plurality of stacks thereof in which the containers in each stack are arranged in upwardly opening nested relation, said apparatus comprising, in combination, a separating mechanism for separating the containers of a stack supplied thereto and a feed mechanism for supplying additional stacks of containers to said separating mechanism prior to or upon depletion of a stack being separated, said separating mechanism including vertically extending guide means for supporting a stack of containers to be separated in vertically extending relation, said guide means having an upper end through which a stack of containers to be separated descends, finger means movable into and out of engagement with the containers of the stack in said guide means and operable to separate said containers, one at a time, from the bottom of said stack, and at least one holding shoe disposed below said finger means and operable to engage a side wall of the lowermost container in the stack and thus support the stack of containers in said guide means while said finger means is disengaged from said stack, said feed mechanism including means defining a path for receiving and retaining a plurality of stacks of said containers, one end of said path terminating at a staging station adjacent to the upper end of said guide means, conveyor means for advancing stacks of containers on said path toward and onto said staging station, shiftable means for effecting movement of a stack of containers on said staging station over the upper end of said guide means prior to or upon depletion of a stack being separated, first control means carried by said guide means for controlling said shiftable means, and second control means carried by said staging station and operable to actuate said conveyor means whenever a stack of containers and said shiftable means are absent from said staging station.

4,439,102

MATERIAL HANDLING APPARATUS

Ralph E. Allen, Greene, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Continuation of Ser. No. 30,122, Apr. 16, 1979, abandoned. This application Apr. 6, 1983, Ser. No. 482,454
Int. Cl.³ B60P 1/34; B66F 9/14
U.S. Cl. 414—633 **6 Claims**



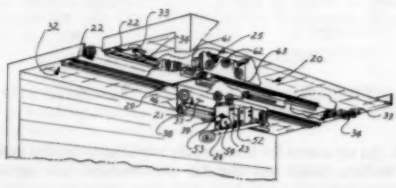
1. A mast assembly for a lift truck, comprising, in combination: a first mast; a compartment adapted to carry an operator, said compartment being suspended from said first mast, with said first mast on a first side of said compartment, means for raising and lowering of said compartment along said first mast; a generally C-shaped frame having a vertical member and upper and lower arm members extending from the vertical extremities of said vertical member; traverse means for suspending said vertical member of said frame on said operator compartment on a second side of said operator compartment opposite from said first side with said arm members extending away from said second side of said compartment, and for moving said frame horizontally back and forth across said second side of said operator compartment; a second mast confined vertically in between said upper and lower arm members of said frame and pivotally connected to said arm members for rotation about a substantially vertical axis; means for tilting said second mast; a load carriage guided for vertical movement along said second mast; and lifting means carried on said second mast for raising and lowering said load carriage along said second mast relative to said compartment and said first mast.

4,439,103

AUTOMATIC EJECTOR SYSTEM

Daniel Almagor, Setauket, N.Y., assignor to The Peelle Company, Bay Shore, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,309
Int. Cl.³ B65G 65/00
U.S. Cl. 414—661 **13 Claims**



1. In a material lift elevator system having an elevator car operating in a vertical shaft between vertically spaced landings, said car having a floor for supporting a material unit and at least one opening for loading and off-loading the material unit to and from the car, means for automatically moving a

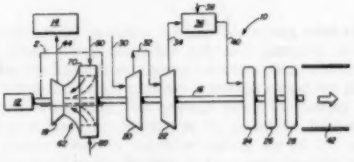
material unit in a horizontal path between a lift position on the floor of the car and a wait position on the landing, said moving means including an arm adapted to engage a generally vertical end face of the material unit and displace said material unit through said path by forces applied to said end face, said moving means being suspended on the car in a zone above the path of said material unit, means supporting said arm for extension and retraction movement from said zone downwardly into said path and upwardly to said zone, said supporting means including means for causing extension and retraction movement of said arm in a substantially vertical plane.

4,439,104

COMPRESSOR INLET GUIDE VANE AND VORTEX-DISTURBING MEMBER ASSEMBLY

David H. Edmonds, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 15, 1981, Ser. No. 273,715
Int. Cl.³ F01D *17/16*
U.S. Cl. 415—161 **10 Claims**



1. Inlet guide vane and flow disturbing member apparatus adapted to be mounted in an inlet opening of a gas intake device, said apparatus comprising:

(a) an articulated guide vane having a leading edge member, and a trailing body member pivotable about an axis between first and second positions;

(b) a flow disturbing member;

(c) means for connecting said flow disturbing member and said trailing body member for relative pivotal motion about said axis, and for positioning said flow disturbing member to intercept a portion of a gas stream flowing past said trailing body member in a direction generally perpendicular to said axis; and

(d) cooperating means on said flow disturbing member and said leading edge member for preventing appreciable pivotal motion of said flow disturbing member about said axis.

4,439,105

OFFSET-AXIS WINDMILL HAVING INCLINED POWER SHAFT

Kurt H. Hohenemser, Brentwood, Mo., assignor to Jerome A. Gross, Clayton, Mo.

Continuation-in-part of Ser. No. 49,348, Jun. 18, 1979, Pat. No. 4,298,313. This application Oct. 2, 1981, Ser. No. 307,862
Int. Cl.³ F03D *7/04*
U.S. Cl. 416—13 **11 Claims**

1. A wind energy conversion machine comprising

mast structure including means to provide a yaw axis, and

wind-responsive components supported thereon for substantially free yawing including

(a) a rotor having a hub mounting a plurality of rotor blades on a shaft,

(b) shaft bushing means projecting the rotor to the windward side of the mast structure, the shaft axis:

(1) being at a fixed moment arm from said yaw axis, whereby rotor thrust applies a furling moment about said yaw axis, and

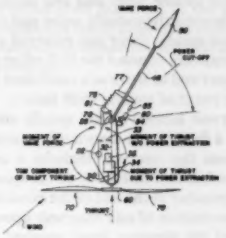
(2) having a downward-and-aft inclination which provides a vertical torque component accompanying extraction of power from the rotor, and

(3) whose sense of rotation applies such vertical torque component as an anti-furling moment substantially balancing that part of the furling moment of the rotor thrust which accompanies extraction of power,

(c) power extraction means having the same inclination,

(d) means to couple the rotor to the power extraction means,

(e) wind vane means including a boom having forward at its



end a furling hinge, whereby to permit furling of the rotor relative to said wind vane means, and

(f) yieldable means operating on said wind vane means to apply about said furling hinge an anti-furling moment in an amount which substantially balances the moment of thrust of the rotor when uncoupled from the power extraction means,

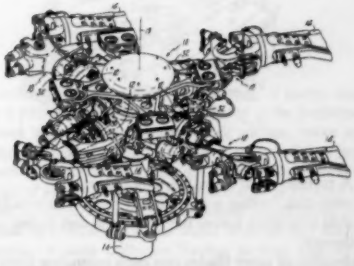
whereby to substantially overcome the tendency of the rotor to overspeed on discontinuance of coupling of the rotor to the power extraction means.

4,439,106

ROTOR BLADE SHAFT INTEGRITY MONITORING SYSTEM

Donald L. Ferris, Newtown; Elliot F. Olster, and Michael J. Marchitto, both of Orange, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 14, 1982, Ser. No. 388,299
The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.
Int. Cl.³ B64C *27/48*
U.S. Cl. 416—61 **5 Claims**



1. A helicopter rotor including a hub member mounted for rotation about an axis of rotation and having at least one hub arm and related helicopter blade projecting substantially radially therefrom for rotation therewith, and an improved spindle assembly comprising:

a hollow spindle shaft extending radially from within the hub arm and outwardly therebeyond and having a radial inner end, a radial outer end, and a central bore extending the full length of said shaft, said radial outer end shaped to define an enlarged chamber contiguous with the spindle

bore and being adapted to be operatively connected to a helicopter blade,

bearing means operatively connecting the spindle shaft inner end to the hub arm and operative so as to support said spindle shaft and hence the blade from the hub so that blade centrifugal loading during rotor operation will be passed through said spindle shaft and said bearing means to said hub,

a bolt extending through the spindle shaft bore for the full length and having an inner end comprising a bolt head abutting said spindle inner end and having an outer end extending beyond the radially outer end of the shaft bore and into said spindle outer end enlarged chamber,

means to operatively connect the bolt outer end to the spindle shaft outer end to serve as a redundant centrifugal load path in the event of spindle shaft failure,

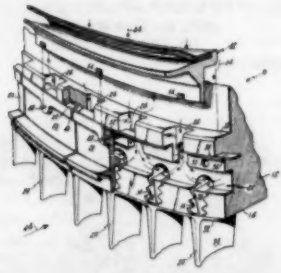
a closed reservoir located in said spindle enlarged chamber containing a fluid dye in a normally unpressurized condition, wherein the reservoir includes a conduit for dye passage to a location externally of the spindle, and a pressure relief member at the end of the conduit, and means to cause pressurization of said reservoir upon loading of the bolt beyond the pressure level required to actuate said relief member.

4,439,107

ROTOR BLADE COOLING AIR CHAMBER

Stephen M. Antonellis, Hebron, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 16, 1982, Ser. No. 418,860
Int. Cl.³ F01D 5/08
U.S. Cl. 416—95 **6 Claims**



1. A turbine rotor assembly, comprising

a rotor disk having a plurality of circumferentially spaced slots extending across the rim of the disk at the periphery thereof;

a plurality of rotor blades one each extending from a corresponding slot on the disk;

a plurality of sideplate segments disposed in overlapping end to end relationship circumferentially about the rotor disk and spaced axially from a portion of the rotor disk to form a chamber for rotor blade cooling air therebetween; and

a flexible strip having overlapping ends disposed inwardly of the sideplate segments and adapted to seat against the inwardly facing ends of said sideplate segments to seal radially extending gaps between each pair of adjacent sideplate segments.

4,439,108

WINDMILL HAVING CENTRIFICALLY FEATHERED ROTORS TO CONTROL ROTOR SPEED

Richard Will, R.D. #2 Dutch Rd., Waterford, Pa. 16441

Filed Jun. 8, 1982, Ser. No. 386,431
Int. Cl.³ F03D 7/04
U.S. Cl. 416—131 **12 Claims**

1. A windmill comprising:

a hub;

at least two rotors mounted on said hub, each said rotor including a rotor root rotatably coupled to said hub and a rotor blade mounted on said root, said hub and each rotor adapted such that wind forces produce rotation of each said blade, each said root and said hub around an axis of rotation passing through said hub, said hub defining a plane of rotation perpendicular to said axis of rotation;

each said root mounted in an initial position at a predetermined compound angle with respect to said axis of rotation and said plane of rotation, each said blade fixedly mounted on said root at a predetermined angle with respect to said plane of rotation with each said root mounted in said initial position;

biasing means for applying a force biasing each said root in said initial position;

linkage means disposed in said hub for synchronizing rotation of the roots of the said rotors with respect to each other, comprising at least a pair of root linkage members each having opposed ends, one end of each of the root linkage members coupling a respective rotor root, and a pivot linkage member having opposed ends coupling respective of the other ends of said root linkage members, said biasing means coupling the other ends of said root linkage members and said pivot linkage to said hub;

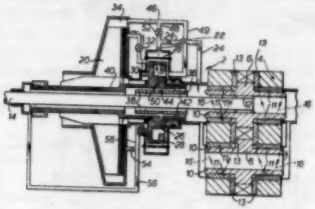
wherein rotation of said hub and each said rotor produces a centrifugal force opposing the biasing force applied by said biasing means, such that when each said rotor and said hub attain a rotation speed exceeding a predetermined value, the centrifugal force thereby generated overcomes said biasing force to produce rotation of each said blade root relative to the axis of rotation and the plane of rotation thereby to vary said compound angle such that the angle of each said blade with respect to said plane of rotation is increased, decreasing the pitch of each said blade with respect to the wind direction, and correspondingly controlling the speed of rotation of said hub and each said rotor.

4,439,109

PUMP FOR PUMPING A LIQUID CONTAINING SOLID CONTAMINANTS

Robert S. Wood, Gosport, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Dec. 7, 1981, Ser. No. 328,246
Claims priority, application United Kingdom, Dec. 5, 1980, 8039113
Int. Cl.³ F01C 21/04
U.S. Cl. 418—88 7 Claims



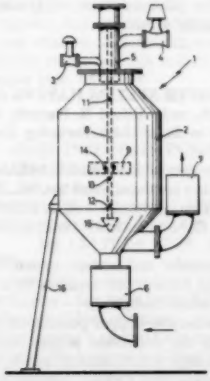
1. A pump for pumping a liquid containing solid contaminants, which pump comprises rotatable pumping means for pumping the liquid from a pump inlet to a pump outlet, a filter for filtering the liquid, auxiliary pumping means for pumping the liquid to the filter, first passage means for passing filtered liquid to at least one bearing in the pump for lubrication, a rotor device which is operative during use of the pump to cause the liquid inside the filter to swirl and clean the inside of the filter, and second passage means for allowing the passage of unfiltered liquid from the inside of the filter whereby the unfiltered liquid can remove separated solid contaminants on the inside of the filter.

4,439,110

CONTROLLING AND REGULATING DEVICE FOR PUMPS WITH CONSTANT VOLUME

Jean G. Massaux, 50 rue de Dinant - B -, 6302 Gougnies, Belgium

Continuation of Ser. No. 95,261, Nov. 19, 1979, abandoned. This application Mar. 8, 1982, Ser. No. 355,487
Claims priority, application Belgium, Nov. 21, 1978, 191850
Int. Cl.³ F04F 1/06
U.S. Cl. 417—129 8 Claims



1. A device for controlling and regulating the performance of pumps having a constant volume pump body,

admission and evacuation valves for admitting and evacuating a pressurized gas into and out of the pump body, and non-return valves for filling and delivering a pumped liquid into and out of the pump body, comprising:

an independent time-switch device having time impulses which are independently adjustable, the time-switch device maintaining a total duration of a complete cycle of the pump constant from one cycle to the next by varying a stop period while filling the pump body with said liquid and delivering said liquid from said pump body to compensate for varying suction and delivery duration periods thus producing a pulsating and jerky discharge;

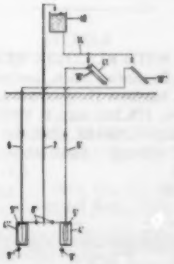
at least three liquid level detectors in the pump body, the three level detectors being adapted to control the opening and the closing of the admission and evacuation valves for the pressurized gas.

4,439,111

SOLAR PUMPING INSTALLATION FOR PUMPING LIQUID AND SOLAR COLLECTOR CONSTRUCTION

Albert Seidel, and Dietmar Wolf, both of Siegertsbrunn, Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,904
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744952
Int. Cl.³ F04B 47/08
U.S. Cl. 417—379 11 Claims

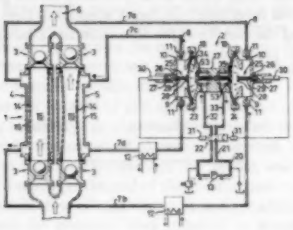


1. A solar pumping system, comprising, a pump housing defining a pump chamber therein, adapted to be positioned in the ground below ground water level, suction valve means connected into said pump chamber for the admission of ground water into said pump chamber, discharge valve means connected out of said chamber for the discharge of ground water therefrom, displacer means in said housing displaceable therein by increase of pressure to expel water through said discharge valve means, a solar collector having at least one hydride conduit therein exposed to the sun for solar heating thereof having hydride therein connected to said pump chamber for generating hydrogen to pressurize said chamber upon heating of said hydride to increase the pressure in said hydride conduit and said pump chamber to force said displacer means to expel water from said pump chamber, and means for cooling said hydride conduit to lower the pressure in said hydride conduit and to permit the inflow of ground water into said chamber through said suction valve means, wherein said means for cooling said hydride conduit comprises a shield for shielding said solar collector.

4,439,112
METHOD AND APPARATUS FOR PUMPING VISCOUS AND/OR ABRASIVE FLUIDS

Henrik M. Kitsnik, Segmon, Sweden, assignor to HK-Engineering AB, Sweden

Continuation-in-part of Ser. No. 940,646, Sep. 8, 1978, abandoned. This application Jan. 14, 1981, Ser. No. 225,136
Claims priority, application Sweden, Sep. 9, 1977, 7710137
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—383 **6 Claims**



1. A process for pumping a viscous or abrasive aqueous fluid, comprising the steps of:

(a) passing said fluid in one direction through an expanding and contracting pumping zone;

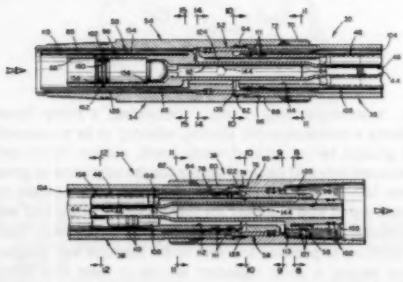
(b) actuating said pumping zone by a second aqueous fluid caused to flow continuously and smoothly through a conduit system having valve means responsive to small pressure differentials adjacent to said pumping zone so as to cause said pumping zone to respond hydraulically to the movement of said second fluid; and

(c) actuating said second fluid by hydraulic pressure from a third non-aqueous fluid.

4,439,113
LIQUID PUMP WITH FLEXIBLE BLADDER MEMBER

Douglas B. Owen, Rochester, Mich., assignor to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Division of Ser. No. 175,281, Aug. 4, 1980, Pat. No. 4,360,320. This application Jun. 25, 1982, Ser. No. 392,159
Int. Cl.³ F04B *43/10*
U.S. Cl. 417—394 **17 Claims**

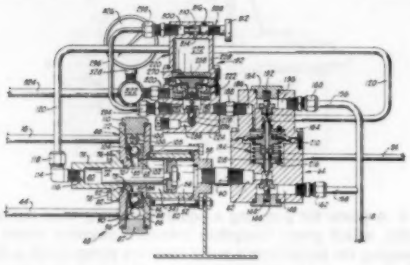


1. A liquid pump module for use in a well, said pump module including a housing, a lower coupling affixed to a lower end of said housing, an upper coupling affixed to an upper end of said housing, a first tube within said housing extending between said lower coupling and said upper coupling and forming a first passage therebetween, a second tube within said housing extending between said lower coupling and said upper coupling and forming a second passage therebetween, a flexible tubular member positioned around both of said tubes and extending between said lower coupling and said upper coupling, at least one of said couplings having means for connecting said first passage with one side of said flexible member, means for supplying fluid under pressure to said first passage means to cause said member to flex, and valve means for controlling the supply of fluid from said supply means to said first passage means.

4,439,114
PUMPING SYSTEM

Garman O. Kimmell, 3125 N. Virginia, Oklahoma City, Okla. 73118

Filed Mar. 19, 1981, Ser. No. 245,494
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—403 **25 Claims**



1. In a gas treating system in which liquid impurity absorbent contacts a pressurized, impurity-containing gas in a contactor, followed by treatment of the impurity-containing absorbent in a treater at a reduced pressure preparatory to returning the absorbent to the contactor, the improvement which comprises:

a pressure-volume energy exchange pump connected to the contactor and driven by a mixture of impurity-containing absorbent and gas from the contactor;

means connected to the pump for transferring absorbent from the treater to the contactor via the pump while elevating the pressure of the absorbent by use of the pump;

a four-way transfer valve connected to the pump for concurrently charging impurity-containing pressurized absorbent and gas to the pump from the contactor, and for discharging impurity-containing absorbent and gas from the pump to the treater via the four-way transfer valve; and

a needle valve controlled, diaphragm-type astable pneumatic amplifier pilot valve drivingly connected to said four-way transfer valve.

4,439,115
MANURE TRANSFER SYSTEM HAVING A PULL PUMP

Clinton A. Nesseth, and Clifford B. Nesseth, both of Barron, Wis., assignors to Butler Manufacturing Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 928,591, Jul. 27, 1978, abandoned, which is a continuation of Ser. No. 759,278, Jan. 14, 1977, abandoned. This application Aug. 3, 1979, Ser. No. 63,592
Int. Cl.³ F04B *29/00, 19/22, 21/04*
U.S. Cl. 417—460 **16 Claims**

1. A manure transfer and storage system for transferring manure or the like from a first location to a second remote storage location, which comprises:

(a) a manure collection hopper positioned at the first location, wherein the collection hopper includes an open upper end through which manure may be loaded into the collection hopper and a closed bottom for retaining the manure in the collection hopper;

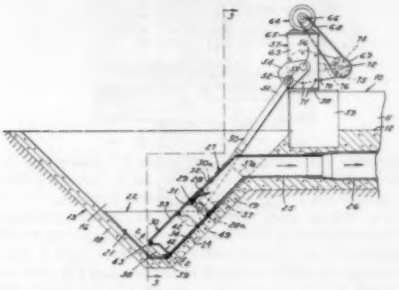
(b) a manure transfer pipe having an inlet spaced from said hopper bottom, for transferring manure from the collection hopper to the remote storage location; and

(c) a pull pump for pumping manure from the collection

hopper into the manure transfer pipe, wherein the pull pump comprises:

(i) an elongated hollow cylinder fixedly diposed at least partially inside the collection hopper, wherein the cylinder includes an open inlet and located inside the collection hopper above the bottom thereof and an outlet end which is operatively connected to the inlet of the manure transfer pipe, wherein the inlet end of the cylinder includes a valve which is opened by manure being forced into the cylinder and which is closed by the weight of the manure in the cylinder;

(ii) an elongated pump piston having a piston body which cooperatively slidably engages the outer surface of the cylinder for pumping manure from the collection hopper into the cylinder, said body having an exterior surface, wherein the piston body is operatively movable generally between the bottom of the collection hopper and the inlet end of the cylinder, the piston body being



movably mounted in the collection hopper for movement in an upward direction towards and in overlying engagement with the cylinder and in a downward direction away from the cylinder, and wherein the piston body has means for loading a charge of manure into the piston body during its downward movement and for dispensing the loaded manure charge into the cylinder during its upward movement such that the manure is lifted upwardly from the bottom of the collection hopper into the cylinder; and

(iii) power means connected to said exterior of the piston body for reciprocating the piston body in its upward and downward movement directions to pump a pluarlity of manure charges through the cylinder and into the manure transfer pipe, wherein after passing said valve, the manure charges pass unobstructed by said connected power means through said cylinder to said manure transfer pipe.

4,439,116

FUEL INJECTION PUMP

Tomonori Ohie, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1982, Ser. No. 350,463

Claims priority, application Japan, Mar. 4, 1981, 56-29047[U]

Int. Cl.³ F02M *59/24*

U.S. Cl. 417—499 **8 Claims**

1. A fuel injection pump, comprising:

a first plunger having a first helix lead which serves to set the timing of the end of fuel injection;

a second plunger having a second helix lead which serves to set the timing of the beginning of fuel injection;

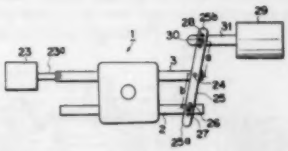
a barrel in which ports corresponding to said first and second helix leads are defined and said first and second plungers are received;

a first pinion member having an engaging portion which is engaged with said first plunger so as to allow said first plunger to reciprocate in its axial direction and to move together with said first pinion member in its circumferential direction;

a second pinion member having an engaging portion which is engaged with said second plunger so as to allow said second plunger to reciprocate in its axial direction and to move together with said second pinion member in its circumferential direction;

a first rack for adjusting the rotational position of said first plunger to set the timing of the end of fuel injection, said first rack being engaged with said first pinion member;

a second rack for adjusting the rotational position of said second plunger to set the timing of the beginning of fuel



injection, said second rack being engaged with said second pinion member;

a governor having an operating member; and

means for operatively connecting said first and second racks and said operating member in such a way that only said first rack is displaced in accordance with the movement of said operating member and only said first rack is displaced at a predetermined ratio of displacement in response to the displacement of said second rack, whereby the change in the amount of fuel injection due to the change in the position of said second rack is offset by the displacement of said first rack by said second rack through said connecting means.

4,439,117

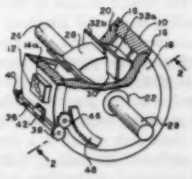
VARIABLE DISPLACEMENT VANE PUMP

Dennen J. Bunger, Clinton, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Aug. 17, 1982, Ser. No. 409,006

Int. Cl.³ F04C *2/00, 15/04*

U.S. Cl. 418—22 **15 Claims**



1. A variable displacement vane pump comprising:

a ported casing having a pair of relatively rotatable complementary cams, each having a surface shaped to provide a curvilinear annular track;

a rotor rotatably mounted in said casing; and

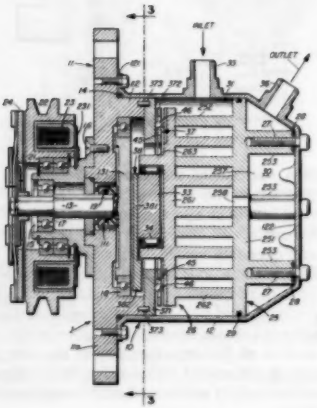
a first and second plurality of vanes mounted to be axially slidable upon said rotor, each of said vanes being sized and positioned to engage a corresponding one of said pair of cams, the vanes of the first plurality engaging one of the cams, the vanes of the second plurality engaging the other one of the cams.

4,439,118

ORBITING FLUID DISPLACEMENT APPARATUS WITH COUNTERWEIGHT ATTACHMENT

Takayuki Iimori, Isesaki, Japan, assignor to Sanden Corporation, Japan

Filed Nov. 4, 1981, Ser. No. 318,313
Claims priority, application Japan, Nov. 10, 1980, 55-161094[U]
Int. Cl.³ F01C 1/02, 21/00
U.S. Cl. 418—55 4 Claims



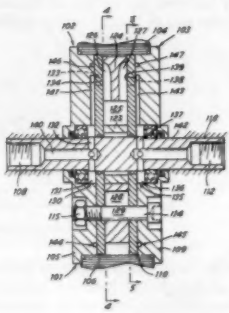
1. In a coupling device for coupling a rotatable drive shaft to an orbiting member of an orbiting piston type fluid displacement apparatus through a drive pin disposed eccentrically of and driven by the drive shaft and rotatably received within a hole in a bushing, the bushing being rotatably carried in a boss extending from the orbiting member, a counterweight assembly comprising an attachment portion for attachment to the bushing and a balance weight portion having a mass to generate a centrifugal force of a magnitude to cancel the centrifugal force generated by the orbital motion of the orbiting parts of the apparatus, fastening means for attaching said attachment portion of said counterweight assembly in a position such that the centrifugal force generated by the motion of said balance weight portion is in a direction opposite to the centrifugal force generated by the orbiting parts of the apparatus, the center of the drive pin being located on an opposite side to a center of the drive shaft with regard to a straight line, which passes through the center of the bushing and is perpendicular to a connecting line passing through the center of the drive shaft and the center of the bushing, the center of the drive pin also being beyond the connecting line in the direction of the rotation of the drive shaft, and means for limiting the angle which the bushing and counterweight assembly can swing about the axis of the drive pin, said limiting means including a portion of said fastening means extending from an end surface of said attachment portion of said counterweight assembly and an indentation formed in an end surface of the drive shaft for receiving said portion of said fastening means with an amount of clearance sufficient to permit a predetermined amount of swing of the bushing and counterweight assembly about the axis of the drive pin.

4,439,119

GEROTOR MACHINE WITH COMMUTATING VALVING THROUGH THE RING GEAR

Hans C. Petersen, and Soren N. Sorensen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 177,373, Aug. 12, 1980, abandoned.
This application Sep. 15, 1982, Ser. No. 418,431
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1979, 2932728
Int. Cl.³ F01C 1/10, 21/00
U.S. Cl. 418—61 B 6 Claims

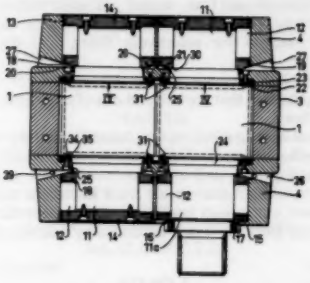


1. A rotary piston machine, comprising, a fixed shaft member, a casing surrounding said shaft member and mounted in sealing and rotatable relation to said shaft member, said shaft member having fluid inlet and outlet passages, radially inner and outer gerotor type wheel and ring gears having rotatable and orbital movement relative to each other and being operable to form expansible chambers therebetween, the orbital movement of said wheel gear relative to said ring gear causing the line of eccentricity therebetween to rotate relative to the axis of said ring gear, said wheel gear being fixedly attached to said shaft member, said ring gear having rotatable movement relative to said shaft member and being connected to said casing so as to only have orbital movement relative thereto, said ring gear having generally radially extending first and second sets of commutating valving slots formed on opposite sides thereof, said casing forming first and second axially spaced sidewalls engaging opposite sides of said gears in sealing engagement therewith, said first and second casing sidewalls having first and second sets of commutating valving control apertures fluidly connected respectively to said inlet and outlet passages and being respectively cooperable with said first and second sets of ring gear valving slots so that when there is relative movement between said wheel and ring gears said expansible chambers on opposite sides of said line of eccentricity have constant fluid communication respectively with said inlet and outlet passages (.), said first and second sidewalls including first and second commutating valving auxiliary apertures respectively cooperable with said first and second sets of gear valving slots to provide hydraulic balancing for opposite sides of said wheel and ring gears, said first set of auxiliary apertures in said first sidewall being exactly opposite said sidewall second set of control apertures in said second sidewall and said second set of auxiliary apertures in said second sidewall being exactly opposite said first set of control apertures in said first sidewall.

4,439,120
MESHING COG-WHEEL INJECTION UNIT WITH LATERAL SEALING AND SCROPERS

Per-Olov Berggren, Ersmark, Sweden, assignor to Skega AB, Ersmark, Sweden

Filed Oct. 23, 1981, Ser. No. 314,415
Claims priority, application Sweden, Oct. 27, 1980, 8007519
Int. Cl.³ F04C 2/18, 13/00, 15/00
U.S. Cl. 418—77 9 Claims



1. Apparatus for injecting viscous material comprising a housing having a cavity therein; two oppositely rotatable driven cog-wheels in the cavity, said cog-wheels having axially projecting journals, said cog-wheels being meshed with each other in an engagement zone and defining with the walls of the cavity a high pressure injection chamber in communication with and at a location just in advance of the engagement zone with respect to the direction of rotation of the cog-wheels; inlet passage means leading to the periphery of the cog-wheels; injection passage means extending from the injection chamber, the arrangement being such that material fed into the inlet passage means travels around part of the peripheries of the cog-wheels to the injection chamber without passing through the engagement zone; sealing means within the casing for cooperation with cylindrical lateral portions of each cog-wheel, at least said cylindrical portions or the surfaces of the sealing means facing said cylindrical portions having annular grooves located radially inwardly of the periphery of the cog-wheels for recieving injection material which might leak between said cog-wheels and said sealing means; guide means in each groove at a location behind the injection chamber with respect to the direction of cog-wheel rotation for directly guiding such material in between the cogs of the cog-wheels at a location in advance of the inlet passage means whereby such material is directly engaged by and carried by the cog-wheels and subsequently returned to the injection chamber.

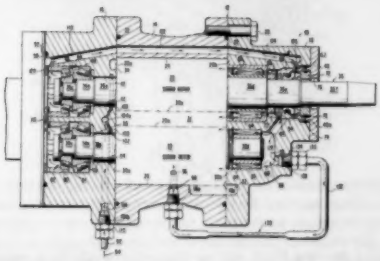
4,439,121
SELF-CLEANING SINGLE LOOP MIST TYPE LUBRICATION SYSTEM FOR SCREW COMPRESSORS

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Mar. 2, 1982, Ser. No. 354,008
Int. Cl.³ F04C 18/16, 29/02
U.S. Cl. 418—98 5 Claims

1. In a helical screw rotary compressor comprising a sealed compressor housing including a central housing defining intersecting parallel cylindrical bores and inlet and outlet end bearing housings, intermeshed helical screw rotors mounted within respective bores for rotation about their axes, shafts borne by said rotors, sealed bearing cavities within said compressor housing inlet and outlet end bearings housings and about said shafts at opposite ends of said rotors, anti-friction bearings mounted within said cavities and supporting said shafts for rotation therein, said intermeshed helical screw rotors and said cylindrical bores defining a compressor working chamber defined by closed threads of the intermeshed helical screw rotors, a low pressure suction port opening to one side of the intermeshed helical screw rotors, and a high pressure discharge port open to said intermeshed helical scew rotors to the opposite sides thereof, an injection passage borne by said housing forming an injection port opening directly into the first closed thread from said suction port for permitting fluid injection to the intermeshed helical screw rotors for sealing and lubricating purposes, the improvement comprising:

oil passage means within said compressor forming a single lubrication loop leading from said compressor working chamber initially to the sealed bearing cavities within the outlet end bearing housing, from said sealed bearing cavities within said outlet end bearing housing to the sealed bearing cavities within the inlet end bearing housing and from said sealed bearing cavities within the inlet end bearing housing to said injection port open to said compressor working chamber,



and wherein said single lubrication loop includes upstream capillary means within said oil passage means upstream of said sealed bearing cavities within said inlet end bearing housing to effect a partial pressure reduction within said oil passage means upstream of said inlet end sealed bearing cavities to change lubricating oil to oil mist form for effective lubrication of the anti-friction bearings formed by said sealed bearing cavities, and

downstream capillary means within said single lubrication loop between said sealed bearing cavities of said inlet end bearing housing and said injection port to insure a further pressure reduction across said anti-friction bearings towards the compressor suction port, even under conditions where the oil injection port is directly open to the suction port during compressor unloading, thereby minimizing the oil entrained in the working fluid insuring an all oil mist lubrication of the bearings, regardless of load conditions and in which the oil mist type lubrication system is self-cleaning at the upstream capillary means.

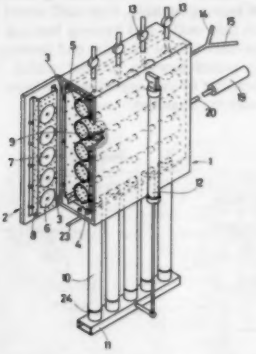
4,439,122
DEVICE FOR FABRICATING PANELS OF EXPANDED SYNTHETIC MATERIALS

Maurice Besse, Leysin, and Jacques Grisoni, La Croix-sur-Lutry, both of Switzerland, assignors to Fresse S.A., Switzerland

Filed Nov. 17, 1982, Ser. No. 442,520
Claims priority, application European Pat. Off., Nov. 18, 1981, 81201273.0
Int. Cl.³ B29D 27/00
U.S. Cl. 425—4 R 5 Claims

1. An installation for the manufacture of panels of steam-expandable particulate synthetic material, possessing two groups of intercommunicating, intersecting, parallel, rectilinear tubular passages, which comprises a rectangular, parallelepipedal leaktight steam chamber provided with a gate on one of the short sides, inside which a tubular fixed mold of perforated steel plate is attached at a distance from the walls of the chamber, the shape of the mold corresponding to the external shape of the panel to be obtained, a first set of fixed, parallel, perforated metal tubes inside the mold, corresponding to one

of the groups of tubular passages to be obtained in the panel, these tubes possessing lateral holes for the passage of a second set of perforated or non-perforated metal tubes firmly fixed to a movable external support, passing through one of the short walls of the steam chamber and capable of moving perpendicular to the tubes of the first set, passing through the latter, and this second set of tubes corresponding to the second group of tubular passages, and at least: an inlet valve for the partially expanded particulate synthetic material, an inlet for the steam



and for a cooling fluid, and an extractor working in parallel with the tubes of the first group to push the molded panel out of the mold by causing it to slide over the tubes of the first group, one of the ends of the tubes located inside the steam chamber being closed, in the molding position, and provided with a nozzle for the injection of a cooling liquid, while the other end communicates with the steam chamber and while those ends of the movable tubes which are located on the outside are open.

4,439,123

INJECTION MOLDING MACHINE

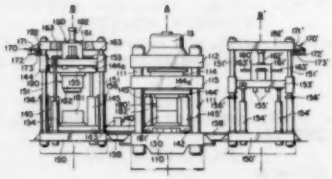
Tsutomu Sano; Naoki Takeuchi, and Masanobu Kurumaji, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 4, 1982, Ser. No. 374,734

Claims priority, application Japan, Jun. 9, 1981, 56-89244; Jul. 13, 1981, 56-104440[U]; Jul. 24, 1981, 56-110799[U]; Aug. 18, 1981, 56-122835[U]

Int. Cl.³ B29D *9/06*

U.S. Cl. 425—112 **19 Claims**



1. An injection molding machine comprising;

(a) a first station for injecting a plasticized material into a die cavity, said first station including a molding machine and a first die half which serves exclusively in said first station;

(b) a second station for joining facing sheets to the articles produced by said first station, said second station including a stamp press and a second die half which serves exclusively in said second station;

(c) at least two third die halves, each of which is sized and shaped to cooperate with both said first and said second die halves;

(d) a third station for trimming excess facing sheet material from the articles produced by said second station, said third station including a trimming cutter which conforms to said third die halves;

(e) at least two die carriages movable among said first, second, and third stations, each of said die carriages fixably supporting thereon one of said third die halves;

(f) means for guiding movement of said carriages between and through said first, second, and third stations;

(g) carriage clamp means at each of said first, second, and third stations for selectively fixing said die carriage therein;

(h) first closing means at said first station for releasably clamping said first die half and one of said third die halves together;

(i) second closing means at said second station for releasably clamping said second die half and one of said third die halves together; and

(j) third closing means at said third station for moving said trimmer cutter into position to trim excess facing sheet material from the article produced by said second station.

4,439,124

MACHINE FOR AUTOMATICALLY MAKING ROLLED FOOD PRODUCTS SUCH AS EGG ROLLS AND THE LIKE

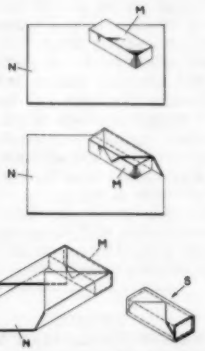
Hidefumi Watanabe, Amagasaki, Japan, assignor to Daleigiken, Inc., Amagasaki, Japan

Filed Jul. 2, 1981, Ser. No. 280,065

Claims priority, application Japan, Jul. 12, 1980, 55-95519; Jul. 12, 1980, 55-95524; Jul. 12, 1980, 55-95520; Jul. 12, 1980, 55-95521; Jul. 12, 1980, 55-95522; Jul. 12, 1980, 55-95523

Int. Cl.³ B29C *17/00*; B29D *3/00*; A21C *9/06*

U.S. Cl. 425—112 **10 Claims**



1. A machine for automatically making a rolled food product by rolling a food stuffing in a generally rectangular edible skin having first and second diagonally opposite corner portions and third and fourth diagonally opposite corner portions, which machine comprises, in combination:

means for depositing food stuffing on an edible skin at a location on a first corner portion of a diagonal between opposite corners of the skin, with a longer side of said food stuffing parallel to said diagonal while the skin is lying flat on a table;

means for shaping the food stuffing into an elongated configuration to adapt the stuffing to be handled by said means for depositing,

folding means for folding the first corner portion of the skin, which has thereon the food stuffing, so as to overlay the the food stuffing, for turning said overlay backwards and

for folding the third and fourth corner portions on respective sides of the food stuffing so as to overlay the food stuffing at a location opposite to the portion of the food stuffing where the first corner portion is overlaid; and

means for rolling the second corner portion of the skin up around the thus overlayed food stuffing to complete the rolled food product.

4,439,125

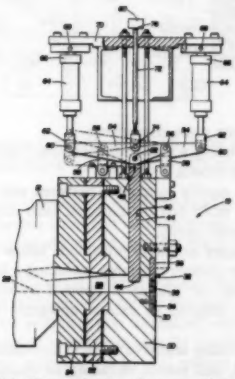
ADJUSTABLE DIE MECHANISM

J. Robert Dieckmann, Akron, Ohio; Richard E. Burg, Grayslake, Ill.; Louis Laurich, Barberton, and J. Richard McCarty, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 31, 1982, Ser. No. 363,976

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—140 **13 Claims**



1. An adjustable die mechanism for extruding a profiled strip of plastic material, comprising:

a. means for providing a flow channel, having a predetermined cross section, for the extrusion therethrough, starting at one end, of said strip of plastic material;

b. a final extrusion die assembly located on the end opposite said one end and having a predetemined profiled opening, of a cross section preferably less than that of said channel, for extruding said strip of plastic material therethrough;

c. a plurality of adjacent segments located upstream and in spaced relation from said extrusion die assembly for variably preforming the profiled strip of plastic material, said plurality of segments being mounted for individual and independent adjustment thereof, each segment having one end thereof capable of extending into said channel, and thus into said strip of plastic material;

d. means for moving said segments relative to said profiled opening in a predetermined manner such that moving said segments into the projection of said profiled opening modifies the flow of said strip of plastic material downstream of said segments as said strip emerges from said die assembly; and,

e. control means for selectively operating said means for moving said segments, thereby producing a strip of plastic material having the desired characteristics.

4,439,126

APPARATUS FOR THE PRODUCTION OF BLOW MOLDED ARTICLES ACCOMPANIED WITH THE RECOVERY OF A BLOWING GAS

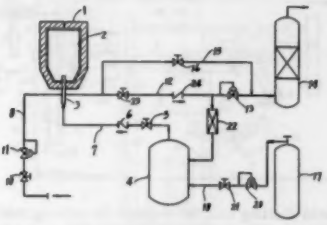
Hatahiko Fukushima, Katano; Tadahiko Handa, Takarazuka, and Kenji Kodama, Hirakata, all of Japan, assignors to Air Products and Chemicals, Inc., Allentown, Pa. and Daido Oxygen Company Ltd., Osaka, Japan

Division of Ser. No. 259,140, Apr. 30, 1981, Pat. No. 4,394,333. This application Feb. 7, 1983, Ser. No. 464,241

Claims priority, application Japan, May 9, 1980, 55-062086

Int. Cl.³ B29C *17/07, 25/00*

U.S. Cl. 425—135 **4 Claims**



1. In an apparatus for blow molding an article comprising in combination a blowing mold having an internal surface corresponding to the contour of the article to be produced and into which an expandable parison is introduced and blow pin means for injection into the interior of the parison enclosed within said blowing mold a blowing gas containing a reactive gas component capable of reacting with the inner walls of the parison, the improvement which comprises:

(a) storage means for holding the blowing gas; blowing gas line means for introducing the blowing gas at a given pressure from said storage means into the interior of the parison;

(b) purging gas line means for introducing a purging gas into the interior of the resulting blow molded article;

(c) recovery gas line means for recovering a mixture of purging gas and blowing gas while still containing a high concentration of the reactive gas component during an initial stage of purging from the article and introducing the gas into said storage means;

(d) means for controlling the pressure of the gas within said storage means to slightly greater than the pressure of the blowing gas; and

(e) an exhaust means for exhausting said mixture of purging and blowing gas after the pressure and reactive gas component concentration in said storage means reaches a preselected level.

4,439,127

MACHINE FOR PRODUCING BLOWN HOLLOW SYNTHETIC RESIN WORKPIECES

Walter Frohn, Geiselgasteigstrasse 100, D-8000 Munich 5, Fed. Rep. of Germany

PCT No. PCT/DE81/00017, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02134, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 22, 1981, Ser. No. 305,639

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002191; Oct. 3, 1980, 8026528[U]

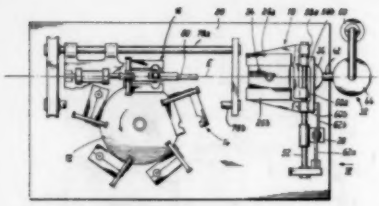
Int. Cl.³ B29C *17/07, 17/12*

U.S. Cl. 425—155 **37 Claims**

1. In a machine for producing blown hollow synthetic resin workpieces of the type having a machine bed, a preform delivery unit mounted on the machine bed for delivering a preform from an extruder head to a blow mold shutting unit, a blow mold shutting unit comprising two blow mold supports for taking up the blow mold halves of a blow mold split along an

upright parting plane, said blow mold shutting unit being movable mounted on said machine bed for movement between an upper preform hand-over position and a lower blowing position, a blow mandrel movably mounted on said machine bed for movement between an inoperative and operative blow position, in the latter of which it is inserted into a blow opening of the blow mold, and at least one after processing unit for after-processing the blown hollow workpieces, the improvement comprising:

a turntable having a plurality of rests for the blown hollow articles spaced about its periphery, said turntable being mounted on said machine bed for stepwise movement;



blow mold shutting unit drive means for moving said turntable in a successive stepwise manner between a takeover position located at said parting plane of said blow mold shutting unit at which position a blown hollow article is transferred to a turntable rest by means of the blowing mandrel and at least one after-processing unit;

an oscillatable blow mandrel carriage which supports said blowing mandrel and is horizontally movable in said parting plane of said blow mold shutting unit between said takeover and said blowing positions; and,

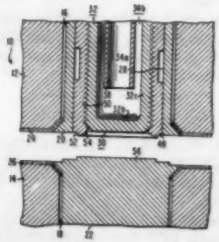
said blow mold shutting unit having a side distal to said blow mandrel carriage, on which side horizontal guides are disposed for said blow mold supports.

4,439,128

APPARATUS FOR MOLDING A RECORDED DISC HAVING A MOLDED-IN CENTER HOLE

Leonard Loufk, and Richard E. Ballard, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,111
Int. Cl.³ B29D *17/00*
U.S. Cl. 425—290 **5 Claims**



1. In a mold for molding recorded discs which includes a pair of opposed mold plates and a center hole forming pin slidably mounted in an opening in one of said mold plates for movement toward and away from the other mold plate, the improvement comprising:

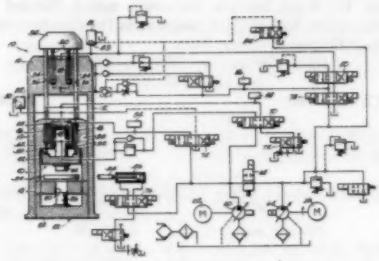
said center hole forming pin including an elongated rod having a passage therethrough to a closed end, said passage adapted to receive a flow of a heat control medium and a tubular sleeve cap having a longitudinal opening completely therethrough removably mounted around the rod at said closed end, said cap projecting beyond said closed end and forming with said closed end a recess with the closed end being the bottom of the recess.

4,439,129

HYDRAULIC REFRACTORY PRESS INCLUDING FLOATING UPPER AND LOWER PLUNGER ASSEMBLIES

Gary R. Long, Bolingbrook, and Hideo Okunami, Calumet Park, both of Ill., assignors to Wehr Corporation, Milwaukee, Wis.

Filed Oct. 26, 1982, Ser. No. 436,698
Int. Cl.³ B30B *11/04, 1/32*
U.S. Cl. 425—352 **6 Claims**



1. A hydraulic press comprising

a frame including a pair of spaced-apart vertical side members and a crown,

a mold box rigidly supported between said vertical members, said mold box including at least one vertically extending mold cavity,

a lower plunger assembly positioned below said mold box, said lower plunger assembly including a lower crosshead and at least one plunger supported by said lower crosshead and adapted to extend upwardly into said mold cavity,

means for causing selective vertical movement of said lower crosshead, said means including an ejection cylinder assembly supported by said crown,

an upper plunger assembly positioned above said mold box and including an upper crosshead and at least one upper plunger supported by said crosshead and adapted to extend downwardly into said mold cavity,

means for supporting said upper crosshead for vertical movement with respect to said mold box and said lower crosshead including a hydraulic cylinder, means for fixidly connecting said hydraulic cylinder to said lower crosshead, a ram housed in said cylinder and adapted to selectively drive said upper crosshead downwardly, and a kicker cylinder assembly,

a first fluid pressure source and a second fluid pressure source, and means for selectively connecting said first fluid pressure source to said ejection cylinder and to said hydraulic cylinder and for selectively connecting said second fluid pressure source to said ejection cylinder and said hydraulic cylinder,

said means for selectively connecting includes a flow separator valve positioned between said first fluid pressure source and said second fluid pressure source,

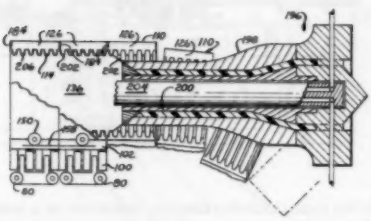
said first fluid pressure source is a first variable volume variable pressure pump and wherein said second fluid pressure source is a second variable volume variable pressure pump.

4,439,130

PLASTIC TILE CORRUGATOR

Heinrich Dickhut, Chebanse, and Alfred Lilienthal, Bourbonnais, both of Ill., assignors to Cullom Machine Tool & Die, Inc., Cullom, Ill.

Filed Nov. 23, 1981, Ser. No. 324,371
Int. Cl.³ B29C 17/07
U.S. Cl. 425—388 26 Claims



14. A corrugator for receiving plastic from an extruder and molding the same into a corrugated plastic tile, said corrugator comprising:

a frame having thereon a forward trackway, a return trackway and having front and rear trackways, the trackways cooperating to define an endless trackway about said frame;

a plurality of individual mold assemblies each of which has a pivotable carriage with rollers disposed on said endless trackway for rolling action therealong and a pair of mold blocks mounted to said carriage for opening and closing transversely with respect to said endless trackway, said mold blocks when closed forming a corrugated tile mold extending therethrough;

a driven sprocket, said sprocket including a plurality of tongues to sequentially engage said mold assemblies and continuously drive them about said frame, said carriages of adjacent mold assemblies being pushed in abutting relationship to arrange said mold blocks of adjacent mold assemblies contiguous to one another along said forward trackway;

a cam surface along said forward trackway to pivot said carriages and close said mold blocks therealong to form a molding section defined by a corrugated tunnel to receive, move with and mold extruded plastic, said cam surface pivoting said carriages to open said mold blocks radially away from said molded tile at the end of the molding section;

an annular opening in said mold blocks and around the tunnel, said opening being in communication with radially spaced longitudinal bores in said mold blocks which are in turn in communication with said tunnel through a plurality of slits; and

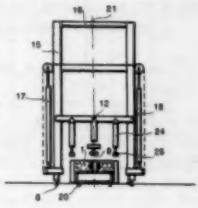
a vacuum manifold spaced closely from said mold blocks along said forward trackway, said manifold communicating with said annular opening through a port in said mold blocks which registers with said manifold along said molding section.

4,439,131

APPARATUS FOR PRODUCING CONCRETE ELEMENTS OF HIGH DIMENSIONAL ACCURACY

Laszlo Nagy; Laszlo Papp; Laszlo Toth; Endre Jankovics, and Zoltan Varnagy, all of Budapest, Hungary, assignors to Beton- es Vasbetonipari Müvek, Budapest, Hungary

Continuation-in-part of Ser. No. 344,091, Jan. 29, 1982, abandoned, which is a continuation of Ser. No. 95,144, Sep. 6, 1979, abandoned, which is a continuation of Ser. No. 906,576, May 16, 1978, abandoned, which is a continuation of Ser. No. 725,795, Sep. 23, 1976, abandoned. This application Feb. 11, 1982, Ser. No. 347,870
Claims priority, application Hungary, Sep. 24, 1975, BE 1241
Int. Cl.³ B28B 1/08
U.S. Cl. 425—436 R 3 Claims

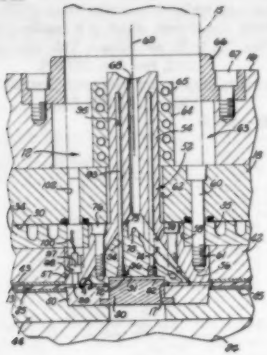


1. A rigid apparatus of undemountable construction for the serial production of prefabricated concrete and reinforced concrete elements or formed products of a high dimensional accuracy that do not require solid inner cores, the apparatus comprising, in combination: rigid form means for the products; means for filling said form means with concrete and providing vibration to produce the formed products; and means for removing the said formed products from said form means; wherein, said form means is an assembled, solid, coreless, rigid, high-strength form having an opening at its top, with a base plate at its bottom, for shaping at least bottom and side surfaces of the products, wherein at least one oriented and temporarily fixed circular liner element is on and conforms to the shape of at least two opposite side surfaces of said opening in said form means, and which has depressions to receive a lifting means which has spreading extension elements and a wedge means which, when pulled upward spreads the extension elements apart so they fit into the liner depressions, wherein the form side surfaces of said form means that shape the product side surfaces have a surface roughness coefficient having an arithmetical mean deviation from the mean line of the profile of at most, $R_a = 1.25$ μm and are substantially parallel to the pulling force of said lifting means and substantially perpendicular to the base plate, which lifting means includes means for at least partly lifting the formed product substantially vertically out of the top opening of said filled form means; and further comprise means for securing said filled form in a rigid, fixed position during product removal therefrom, constituted by tie-down elements braceable against said filled form by the aid of dual-acting work cylinders, while immobilizing means which includes supporting elements operable by dual-acting work cylinders which force said securing means against said filled form immobilizing said filled form and the product itself against tilting with respect to said filled form means while lifting out the formed products from said filled form in a substantially vertical direction substantially parallel with the preceding position of said products within said form; wherein said lifting means includes a rollable frame having posts in a central part of said frame, said posts forming part of said lifting means together with a lifting frame operable by said dual-acting work cylinders for substantially vertically moving said frame, the latter carrying thereon a removing member for lifting the formed products out of said filling form, in cooperation with said securing and immobilizing means.

4,439,132
HOT SPRUE ASSEMBLY FOR AN INJECTION MOLDING MACHINE

Rocky V. Morrison, Redondo Beach, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Jun. 10, 1981, Ser. No. 272,432
Int. Cl.³ B29D 17/00
U.S. Cl. 425—548 30 Claims



1. In an injection molding machine for producing centrally apertured record discs, apparatus for controlling flow of molten disc-forming material into a disc-shaped mold cavity, comprising:

a sprue assembly forming permanently open and relatively narrow annular gate for passage of the molten disc-forming material into the mold cavity, said gate being disposed in a plane recessed slightly toward the center of the mold cavity from the general plane of one surface of the disc to be formed within the mold cavity; and

heater means for controlled elevation of the temperature of said sprue assembly to create a preselected temperature gradient between said sprue assembly and the mold cavity for permitting solidification of the disc-forming material within the mold cavity up to the gate without substantial solidification of disc-forming material within said sprue assembly.

4,439,133
TURRET-TYPE INJECTION-MOLDING MACHINE

Herbert Rees, Willowdale; Paul Brown, Orangeville, and Miroslaw Grund, Brampton, all of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Division of Ser. No. 237,678, Feb. 24, 1981, Pat. No. 4,330,257.
This application Oct. 16, 1981, Ser. No. 312,135
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ B29F 1/14; B29C 5/00
U.S. Cl. 425—556 3 Claims

1. An injection-molding machine comprising:

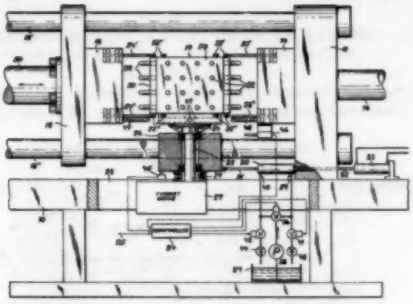
a first platen stationary on a machine bed;

a second platen slidable on two pairs of the tie bars secured to said first platen;

a mold plate with at least one cavity on one of said platens communicating with a source of plastic material for forming a workpiece in said cavity upon relative movement of said platens toward each other into a mold-closed position;

a turret with a plurality of faces rotatable into a like plurality of operating positions about an axis transverse to the path of platen motion, said turret being journaled on a carriage which is slidable on one of said pairs of tie bars in timed relationship with the displacement of said second platen upon relative movement of said platens away from each other into a mold-open position, said turret being provided with a core on each of said faces receivable in said cavity in a respective operating position for releasably extracting a freshly molded workpiece from said path of platen motion;

drive means on said carriage coupled with said turret for sequentially rotating same into said operating positions; and

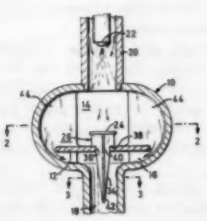


indexing means including coacting formations on at least one of said platens and on said turret for positively locking said turret in any operating position during incipient relative movement of said platens into said mold-closed position, thereby preventing untimely rotation of said turret by said drive means.

4,439,134
COMBUSTION CHAMBER FOR PULSATING COMBUSTION

Karl B. Olsson, Kivik, Sweden, assignor to Mareck B.V., Amsterdam, Netherlands

PCT No. PCT/SE81/00228, § 371 Date Apr. 8, 1982, § 102(e) Date Apr. 8, 1982, PCT Pub. No. WO82/00702, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 12, 1981, Ser. No. 369,018
Claims priority, application Sweden, Aug. 12, 1980, 8005680
Int. Cl.³ F23C 11/04; F23D 13/12
U.S. Cl. 431—1 9 Claims



1. A combustion chamber for pulsating combustion of a fuel-air mixture, the combustion chamber having a first chamber, a second chamber and a plurality of side chambers and including an inlet and an outlet having a common axis and providing substantially axial inflow of the fuel-air mixture to the first chamber and substantially axial outflow for the second chamber, as well as a partition wall situated substantially in a radial plane relative to said axis and separating the inlet and outlet chambers to guide the stream of gases over the edges of the partition wall from the first chamber via the plurality of side chambers to the second chamber, characterized in that an elongated member extends axially through a central opening in the partition wall and through the second chamber and into the

outlet so as to be heated by the gases, the member having an end disposed between said partition wall and the inlet, said end having associated therewith a hot body located in the first chamber to serve as a hot fuel spreader.

4,439,135

PROCESS FOR THE OPERATION OF PREMIXTURE BURNERS AND BURNER FOR CARRYING OUT THE PROCESS

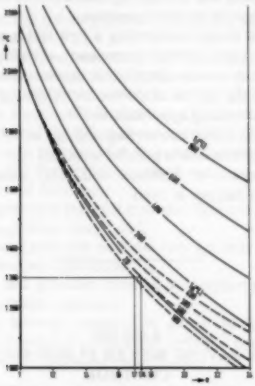
Detlef Altemark, Dorsten; Hans Sommers, Essen, and Manfred Weid, Haltern, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 160,892

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926278

Int. Cl.³ F23D *13/00*

U.S. Cl. 431—2 6 Claims



1. A process for the operation of a pre-mixing burner under at least normal pressure with gaseous fuels, or with fuels which are liquid at normal temperature and completely vaporized before combustion, at low combustion temperatures, forming waste gases having a low content of noxious substances, comprising the steps of

feeding to the burner a homogeneous mixture comprising a fuel in gaseous or respectively vaporized state, a combustion air quantity which is required for the complete combustion of the fuel and a cooling gas quantity serving for setting the combustion temperature of 1100° C. to 1700° C.,

combusting the mixture in the burner in at least one central main flame which is surrounded by several support flame rings, and

protecting the arising total flame against access of ambient air and/or waste gas and against cooling or heating until burning is completed, and wherein

the fuel, air and cooling gas are homogeneously mixed substantially in advance of being fed to the burner.

4,439,136

THERMAL SHOCK RESISTANT SPHERICAL PLATE STRUCTURES

William C. Pfefferle, Middletown, N.J., assignor to The United States of America as represented by Administrator of Environmental Protection Agency, Washington, D.C.

Filed May 13, 1980, Ser. No. 149,458

Int. Cl.³ F23D *3/40, 13/12*

U.S. Cl. 431—7 9 Claims

1. A method of combusting fuels with a catalyst structure which obviates the effects of thermal shock, including the steps of providing a monolithic structure which is comprised of a catalytic ceramic material, said structure being formed in the shape of a domed plate comprised of a plurality of open-ended cells having integral walls with the cell walls defining parallel flow-through passages, directing a mixture of fuel and air across the plate and through the passages, catalytically combusting the mixture passing through the passages, and causing the domed shape of the plate to flex concave and convex under thermal expansion and contraction for minimizing thermally-generated stresses within the structure.

4,439,137

METHOD AND APPARATUS FOR COMBUSTION WITH A MINIMUM OF NOX EMISSION

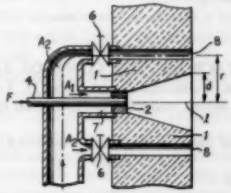
Tomio Suzuki, and Kotaro Morimoto, both of Kobe, Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation of Ser. No. 106,001, Dec. 21, 1979, abandoned. This application Sep. 28, 1982, Ser. No. 425,701

Claims priority, application Japan, Dec. 21, 1978, 53-159054; Apr. 23, 1979, 54-050728

Int. Cl.³ F23M *3/04*

U.S. Cl. 431—8 7 Claims



1. A method of combustion with a minimum of emission of oxides of nitrogen from furnaces or boilers having a burner tile forming a burner wall including a bore formed therein, a burner disposed within said bore, a burner tip integral with said burner, an air baffle including an axial bore having a longitudinal axis and disposed within said burner tile, said baffle surrounding said burner and having at least one air injection opening formed therein and communicating with said axial bore for defining an arcuate axial air flow path about said burner having a longitudinal axis through said tile, a material to be heated, and means for supplying fluid fuels to said furnaces or boilers for combustion with air, wherein said method comprises:

introducing said air through said burner tile via said at least one air injection opening;

axially channeling said air through said at least one air injection opening such that said air is injected into said furnaces or boilers through a flow path included within an arc of less than 240° about said axis of said air baffle;

forming an arcuate flow of air included within said arc flowing asymmetrically about said axis of said air baffle;

directing said arcuate flow of air in an axial direction with respect to said axis of said air baffle; and

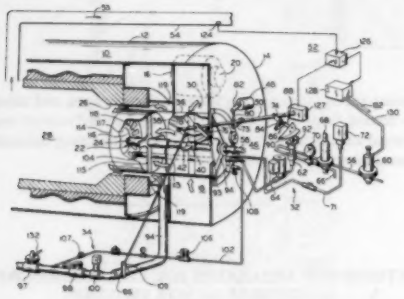
injecting said fluid fuels through said burner tip at an angle from 5° to 45° with respect to said axis of said burner and away from said arcuate flow of air.

4,439,138

COMBUSTION CONTROL APPARATUS

Glenn D. Craig, Menomonee Falls; Ronald K. Wilhelm, and Roy M. Ruiseh, both of Milwaukee, all of Wis., assignors to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Jun. 12, 1978, Ser. No. 914,348
Int. Cl.³ F23N *1/00, 5/00*
U.S. Cl. 431—12 **12 Claims**



6. A method of controlling a combustion process, the steps of delivering fuel to a combustion chamber,

delivering air to said combustion chamber, regulating the ratio of fuel and air delivered to said combustion chamber,

sensing the level of oxygen in the gaseous combustion products exhausting from said combustion chamber,

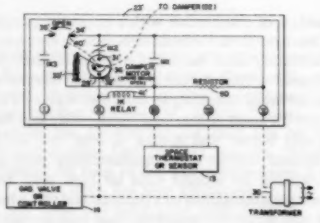
modulating the delivery of said fuel to said combustion chamber in relation to the level of oxygen sensed in said discharge gases.

4,439,139

FURNACE STACK DAMPER CONTROL APPARATUS

Lorne W. Nelson, Bloomington, and Ralph H. Torborg, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 26, 1982, Ser. No. 352,814
Int. Cl.³ F23N *3/00*
U.S. Cl. 431—20 **4 Claims**



1. A stack damper control apparatus adapted to be connected to a damper in the exhaust stack of a fuel burning temperature conditioning apparatus and connected to a space temperature responsive switch means and a source of power for energizing fuel control means comprising,

motor means having a first energization circuit and an output connected to said damper to drive said damper to a closed position upon energization of said motor means,

a spring return means connected to said motor means for driving said output to drive said damper to an open position,

relay means having second energization circuit and two normally open switch means and a normally closed switch means controlled thereby,

switch means connected to said output of said motor means having two circuits, a first of said two circuits of said switch means being closed when said motor is in an energized position and the damper is closed, and a second of said two circuits of said switch means being closed when said motor is in a de-energized position and said damper is open,

first circuit means including said first circuit of said switch means adapted to connect said second energization circuit of said relay means in series with the space temperature responsive switch means and the source of power whereby upon a call for heat by the responsive means, said relay means is energized,

second circuit means comprising said normally closed switch means adapted to connect said first energization circuit of said motor means to the source of power whereby upon said relay means being energized upon a call for heat by the responsive means, said motor means is de-energized and said spring return drives said output and said damper to an open position,

third circuit means comprising a first and a second of said normally open switch means and said second circuit of said switch means adapted to connect the fuel control means to the source of power for operating the temperature conditioning apparatus, and

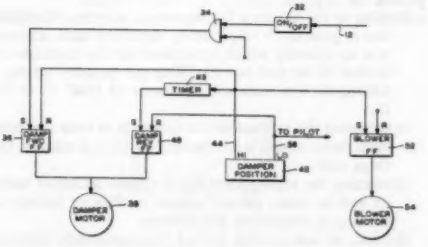
fourth circuit means connecting said second of said normally open switch means in parallel with said first circuit of said switch means to maintain said relay means energized while the damper is open.

4,439,140

ENERGY SAVING BOILER PURGE SEQUENCE CONTROL

Mark E. Stout, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 29, 1982, Ser. No. 362,697
Int. Cl.³ F23N *5/20*
U.S. Cl. 431—31 **2 Claims**



1. An improved purge control for purging a boiler, which has a damper regulated draft, prior to lighting the boiler, comprising in combination:

means for generating a signal to move a damper to a predetermined position which is a substantial percentage of its high fire position;

means responsive to a signal indicating said damper has reached said predetermined position for generating a signal to energize a blower to create a purging draft in said boiler; and

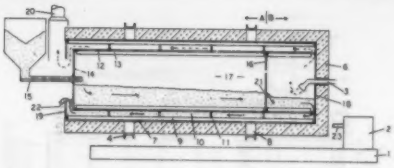
timing means responsive to a signal indicating the energization of said blower to generate a signal to move said damper toward its low fire position after a predetermined purge interval has elapsed.

4,439,141

RECUPERATIVE DOUBLE CHAMBER ROTARY FURNACE

George J. Deckebach, 6553 Wesselman Rd., Cincinnati, Ohio 45248

Filed May 5, 1982, Ser. No. 374,930
Int. Cl.³ F27B 15/00, 7/02; F26B 11/02; F28D 11/02
U.S. Cl. 432—14 8 Claims



8. A method for treating granular material, comprising the following steps:

(a) selecting first and second cylinders, each having a bore, an outer diameter, a closed end, and an open end;

(b) supporting said first cylinder on a base with its cylindrical axis in a generally horizontal attitude;

(c) mounting said second cylinder coaxially within said first cylinder with its open end disposed towards and located proximal said first cylinder closed end;

(d) rotating said cylinders;

(e) feeding granular material into said first cylinder through said first cylinder closed end;

(f) moving said granular material continuously through said first and second cylinders;

(g) heating said granular material in a region proximal said second cylinder open end;

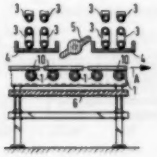
(h) venting heating combustion gases through said first cylinder closed end to said first cylinder open end.

4,439,142

COOLING ZONE FOR A FIRING KILN WITH TRANSPORT ROLLERS

Gottfried Cremer, Steyrer Weg 6, D-5000 Koln 40/Junkersdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 297,426, Aug. 28, 1981, abandoned. This application Dec. 14, 1981, Ser. No. 330,381
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032450
Int. Cl.³ F26B 9/12; F27D 15/02, 1/12
U.S. Cl. 432—18 4 Claims



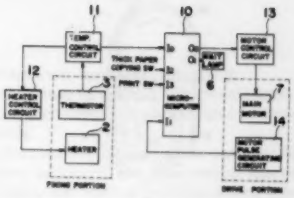
4. In a process for minimizing oxidation of ceramic tile after firing, providing a separate and defined cooling zone into which the tile are introduced from the firing chamber at a continuous, predetermined rate; maintaining a substantially static non-oxidizing atmosphere in the cooling zone substantially isolated from the exterior atmosphere and from atmosphere withdrawal into the firing chamber; cooling the tile solely by heat transfer from the tile to a liquid cooled heat absorption means both above and below the tile utilizing only convection currents in said atmosphere and controlling the rate of cooling solely by regulating the rate of flow of the atmosphere between the tile and heat absorption means.

4,439,143

HEAT ROLLER FIXING DEVICE

Hiroyuki Hanamoto, and Yoshihiro Horie, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1982, Ser. No. 352,251
Claims priority, application Japan, Mar. 12, 1981, 56-36172
Int. Cl.³ F27B 1/26, 9/28
U.S. Cl. 432—36 3 Claims



1. A heat roller fixing device comprising:

a heating roller which is provided with a heating means;

a pressure roller which is held in pressure contact with said heating roller;

a temperature detecting means for detecting surface temperature of said heating roller;

a temperature control means for controlling said surface temperature of said heating roller so as to cause said surface temperature to be equal to a predetermined temperature by respectively turning said heating means on and off before and when said surface temperature of said heating roller, as detected by said temperature detecting means, has reached said predetermined temperature;

a drive means for rotating said heating roller and said pressure roller when said heating roller is being held in pressure contact with said pressure roller;

a changeover means which is selectively changed over to a thick copy mode in accordance with a thickness of a copy paper;

a first means for turning said drive means on when said changeover means has been changed over to a thick copy paper mode; and

a second means for turning said drive means off when said surface temperature of said heating roller, as detected by said temperature detecting means, has reached said predetermined temperature and said changeover means has been changed over to said thick copy paper mode;

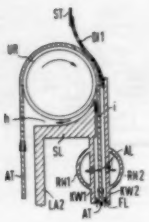
wherein said heating roller and said pressure roller are rotated in response to said drive means being turned on so as to preheat said pressure roller through absorption of heat from said heating roller by said pressure roller, and said heating means is kept turned on by said temperature control means until said surface temperature of said heating roller, having been below said predetermined temperature is restored to said predetermined temperature, whereby it is possible for a copying apparatus including said fixing device to perform a copying operation on thick copy paper.

4,439,144

DEVICE FOR FIXING RECORDINGS CONSISTING OF POWDERY MATERIAL APPLIED TO A TAPE-SHAPE RECORDING MEDIUM WITH THE ASSISTANCE OF SOLVENT VAPOR

Eduard Mair, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,888
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116828
Int. Cl.³ F27B *9/28*; F27D *1/18*; F26B *13/00, 25/00*
U.S. Cl. 432—59 **9 Claims**



9. For use with a fixing station assembly for fixing toner powder images applied to a recording medium with a solvent vapor comprising a housing containing said solvent vapor having an upper end opening and a guidance mechanism for conducting said recording medium over a guide member disposed in said opening and about a first rotary drum disposed in a solvent vapor zone adjacent the lower end of said housing and a second rotary drum disposed in said opening beneath said guide member for exit from said housing, apparatus for removing residues from said recording medium exiting said housing in a manner preventing smearing of said toner powder images comprising:

a channel structure disposed exterior of said housing and having sidewalls enclosing a longitudinally extending from space, said sidewalls defining an upper end opening adjacent said second drum and a lower end opening connected by said free space for receiving therethrough said recording medium passing from said second drum,

flow openings disposed adjacent the upper end of said channel structure and laterally extending in opposed said sidewalls communicating with said free space, and

a source of suction pressure connected to said flow openings for drawing an airflow from said lower end opening over said recording medium in counterflow relation to movement of said recording medium through said channel structure.

4,439,145

ALUMINUM FURNACE AND PREHEATER THEREFOR

Richard J. Strassman, Milwaukee, Wis., assignor to Badger Die Casting Corp., Milwaukee, Wis.

Continuation of Ser. No. 312,782, Oct. 19, 1981, abandoned. This application Nov. 20, 1981, Ser. No. 323,362
Int. Cl.³ F27B *3/04, 3/20*; C21B *7/00*
U.S. Cl. 432—164 **6 Claims**

1. An improved aluminum furnace comprising:

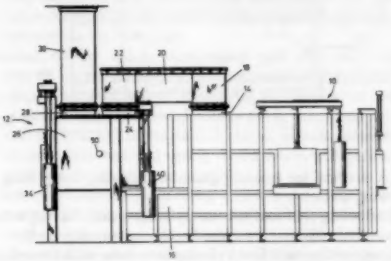
a furnace chamber (10) in which aluminum is heated;

an aluminum preheater chamber (26) located adjacent to the furnace chamber (10);

at least one openable door (32,38) opening into the preheater chamber (26) so that material to be melted in the furnace may be introduced therein and removed therefrom;

an exhaust stack (30) exiting vertically from the preheater chamber (26); and

a flue gas duct connecting the furnace chamber (10) to the preheater chamber (26) which includes a furnace exhaust flue (14) provided on the furnace chamber (10) to direct combustion exhaust gases upwardly therefrom, an exit flue junction (18) connected to the exhaust flue (14), a generally horizontal flue duct (20) connected to the exit flue junction (18), a second flue duct junction (22) connected to the horizontal flue duct (20) over a preheater chamber (26), the exit flue junction (18), horizontal flue duct (20) and second flue duct junction (23) conveying the exhaust gases in a generally horizontal direction, and a



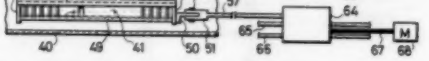
flue inlet (24) provided on the preheater chamber (26) and connected to the second flue duct junction (22) to convey exhaust gases downwardly into the preheater chamber (26) toward its floor (48) to heat metal therein wherefrom the exhaust gases are drawn upwardly into the exhaust stack (30), whereby the downward conveyance of flue gases into the preheater chamber (26) reduces the effect of the draw from the exhaust stack (30) on the pressure in the furnace chamber (10).

4,439,146

HEAT TREATMENT APPARATUS

Kazuhiro Sugita, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,734
Claims priority, application Japan, Jun. 14, 1982, 57-101552
Int. Cl.³ F27D *5/00*; F27B *9/00*
U.S. Cl. 432—253 **1 Claim**



1. A heat treatment apparatus comprising:

a tube having its axis in the horizontal direction for containing objects to be treated by heat;

a holder of a plurality of objects;

first and second supporting means located outside said tube;

means for connecting said first supporting means and said holder;

a first operating means for moving said holder in the horizontal direction;

means attached to said second supporting means for grasping a grip means of said holder by the rotation along its axis; and

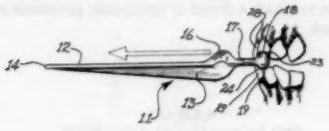
a second operating means for moving said holder in the horizontal and vertical directions.

4,439,147

BITE-TAKING DEVICE

Thomas S. Magill, 2024 Willow Ave. N., Minneapolis, Minn. 55411, and Deborah A. Keys, 2200 Grand Ave. S. #2, Minneapolis, Minn. 55405

Filed Jan. 2, 1981, Ser. No. 222,126
Int. Cl.³ A61C 7/00
U.S. Cl. 433—3 7 Claims



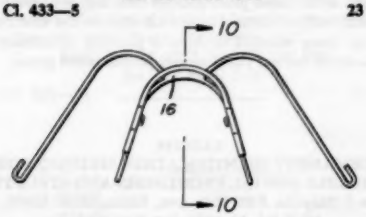
1. A bite-aligning device comprising a handle, a biting panel integral to one end of the handle and having a depth of at least one millimeter and a width in excess of the distance between the upper and lower incisor teeth, a first pair of upper and lower stops secured between the handle and the biting panel, and a second pair of upper and lower stops secured opposite the first pair, the first pair of stops extending above the level of the biting panel to a height sufficient to contact only a portion of the upper and lower incisors.

4,439,148

ORTHODONTIC APPLIANCES AND METHOD OF TREATMENT

Andrew J. Haas, 1234 Portage Trail, Cuyahoga Falls, Ohio 44221

Filed Feb. 18, 1982, Ser. No. 349,593
Int. Cl.³ A61C 7/00
U.S. Cl. 433—5 23 Claims



1. An orthodontic face bow appliance, comprising:

(A) an outer arch wire having an arcuate central portion;

(B) an inner arch wire having an arcuate central portion and being interconnected to said outer arch wire adjacent their arcuate central portions;

(C) a shield carried by said inner arch wire and projecting only in a vertical plane above and below the plane of said arch wires to engage and exert pressure on the soft tissues of the mouth;

1. Whereby orthodontic correction of the teeth and orthopedic correction of the structure of the mouth are achieved simultaneously,

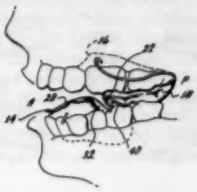
(D) means carried by said outer wire for attachment of said appliance to the head of the user thereof.

4,439,149

VERTICALLY-INDEXED POSTERIOR BITE PLATES

John Devincenzo, 1312 Garden St., San Luis Obispo, Calif. 93401

Filed Sep. 16, 1982, Ser. No. 418,670
Int. Cl.³ A61C 7/00
U.S. Cl. 433—6 2 Claims



1. An orthodontic appliance comprising:

an upper bite plate including a vertical anterior-facing indexing plane, said upper bite plate secured to the upper posterior teeth;

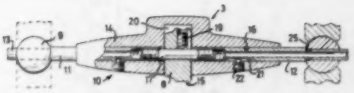
a lower bite plate including a vertical posterior-facing indexing plane, said lower bite plate bearing against the lower front teeth, said vertical posterior-facing indexing plane contacting said vertical anterior-facing indexing plane to prevent retraction of said lower bite plate and sliding on said vertical anterior-facing indexing plane as the jaw opens and closes.

4,439,150

ARTICULATOR FOR USE IN MAKING DENTURES OR PARTS THEREOF

Svante R. Edwardson, Solna, Sweden, assignor to AB Dentatus, Hagersten, Sweden

Filed May 18, 1982, Ser. No. 379,460
Int. Cl.³ A61C 11/00
U.S. Cl. 433—56 4 Claims



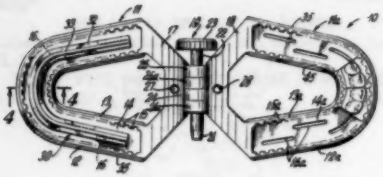
1. An articulator, for use in making dentures or parts thereof, comprising a lower and an upper principal member which are interconnected by means of a condylar mechanism that allows relative movement between said principal members, one of said principal members being provided with condylar track members that are included in said condylar mechanism, the other of said principal members being provided with a condylar shaft means which comprises two shaft members, each of which has an end portion axially displaceably inserted into a bore in a condylar ball that is mounted in one of said condylar track members, said two shaft members being mutually movable in an axial direction and being interconnected by an intermediate part, characterized in that said condylar shaft means comprises adjustment means enabling simultaneous axial movement of said shaft members in opposite directions, said adjustment means comprising a rotatable wheel means which is held axially fixed in an opening in said one principal member, and which is rotatable together with the intermediate part to displace said shaft members, each of said shaft members being non-rotatably mounted in said one principal member and being in threaded engagement with said intermediate part, which has two oppositely directed threads, one for each shaft member.

4,439,151

DENTAL DEVICE

Cahal Whelan, Highview Rd., Pound Ridge, N.Y. 10576

Filed Jun. 30, 1980, Ser. No. 164,842
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—60 **8 Claims**



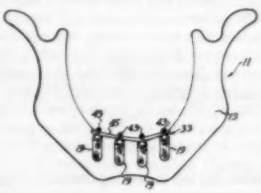
1. A dental device for fabricating models comprising:
a recessed tray having a base and inner and outer walls extending upwardly therefrom, said base having apertures extending therethrough in a predetermined pattern and a rear portion extending upwardly from the tray and having a pair of spaced, hollow cylindrical members at the end thereof, and
a member mounted within the tray, having predetermined lower portions extending through the apertures in the base of the tray, a base, and an upwardly extending portion integrally engageable by the model which is formed within the tray wherein the model may be readily ejected from the tray by pressing on the lower projecting portions thereof.

4,439,152

METHOD OF JAWBONE ABUTMENT IMPLANT FOR DENTAL PROSTHESES AND IMPLANT DEVICE

Irwin A. Small, 6861 Orinoco Cir., Birmingham, Mich. 48010

Filed Mar. 4, 1982, Ser. No. 354,789
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **22 Claims**



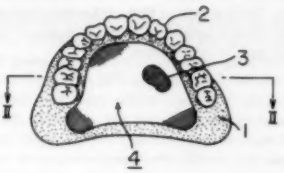
1. The method of implanting a bone fastening device within a jawbone for orthopedic, oral and maxillofacial surgery which comprises the steps of:
locating the approximate area for implantation;
surgically cutting the mucosa at said area and turning back the adjacent tissue exposing the bone;
drilling a hole into the bone of a predetermined depth and diameter;
selecting a hollow porous cylinder of titanium wire mesh of appreciable wall thickness of a height and diameter corresponding to said hole depth and diameter;
threading a temporary nylon plug into said cylinder;
tapping the assembled cylinder and plug down into the filling said jawbone bone;
reassembling the severed mucosa snugly overlying and bridging said cylinder and plug;
retaining said cylinder and plug for a predetermined healing period of two to three months while adjacent bone tissue migrates and grows into, around and through the cylinder wire framework for a mechanical interlock therewith, firmly anchoring and fixing the cylinder within said jawbone;
cutting the mucosa and surgically reexposing said cylinder and turning back the adjacent tissue;
unthreading and removing said plug from said cylinder;
and successively threading into said cylinder a replacement abutment retaining device of titanium;
an axial portion thereof projecting from said jawbone and mucosa to which a dental or orthopedic prosthesis may be attached.

4,439,153

BIO-FUNCTIONAL DENTURE

Haruyuki Kawahara, Moriguchi; Nobuhiro Ishizaki, Uozakikitamachi, and Hiroki Wada, Suita, all of Japan, assignors to Wada Seimitsu Shiken Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1982, Ser. No. 450,751
Int. Cl.³ A61C *13/00*
U.S. Cl. 433—200 **7 Claims**



1. A denture having a porous metal gauze as a denture plate, said porous metal gauze being formed of plural wire nets with a straight wire used as warps and wefts, said nets being laid one over another in layers so as to stagger the meshes thereof with respect to the direction of thickness and to bring the warps and wefts into a parallel relation with each other with respect to the direction of extent, said layered nets being pressed in the direction of thickness, and the crossing portions of said warps and wefts in the same plane and the crossing portions of said warps and wefts in contact with each other in the direction of thickness being sintered to form a plurality of minute and complicatedly curved pores in said porous metal gauze.

4,439,154

PERMANENT IDENTIFICATION METHOD FOR REMOVABLE DENTAL PROSTHESIS AND STRUCTURE

Thomas J. Mayclin, 5705 Dale Ave., Edina, Minn. 55436

Filed Jul. 13, 1981, Ser. No. 282,543
Int. Cl.³ A61C *13/00*
U.S. Cl. 433—229 **9 Claims**

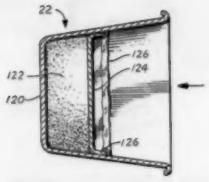
1. An identification method adapted for use in removable dental prosthesis comprising the steps of:
forming a recessed slot in a section of said dental prosthesis;
transcribing written information on the surface of an information carrier film, said information carrier film being an inert, heat shrinkable film;
applying heat to said information carrier film to reduce the surface area of said film and to reduce the size of said written information carried on said film;
placing the reduced information carrier film in said recessed slot; and
covering said information carrier film with a clear overlay material compatible with the material of said dental prosthesis.

4,439,155

END CAPS FOR USE WITH A LAUNCH ENVIRONMENT SIMULATOR PROCESS AND STRUCTURE

George W. Roe, Rockledge, Fla., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 105,991, Dec. 21, 1979, Pat. No. 4,326,847.
This application May 11, 1981, Ser. No. 262,463
Int. Cl.³ F41F 27/00; G01B 9/00
U.S. Cl. 434—12 6 Claims



1. An end cap for use with a launch environment simulation apparatus comprising:

an outer shell formed substantially in the shape of a frustum of a cone having a closed end at its smaller diameter and an opposite open end;

a particulate solid received within the outer shell adjacent to its closed end; and

an inner shell nested within the outer shell such that the solid is confined and substantially sealed between the inner and the outer shells

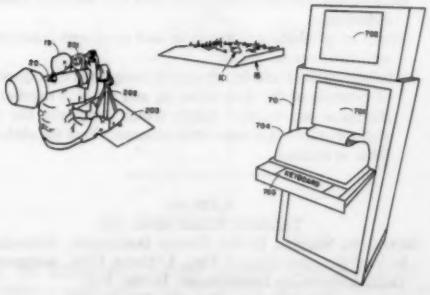
wherein the end cap is removably attached to and within at least one end of a launch environment simulation apparatus, the apparatus comprising an elongated combustion chamber, means for charging the combustion chamber with a combustible gas mixture, and means for igniting the gas mixture selectable by an operator of the apparatus.

4,439,156

ANTI-ARMOR WEAPONS TRAINER

Albert H. Marshall, Orlando; Herbert C. Towle, Maitland; Gary M. Bond, Orlando, and Bon F. Shaw, Winter Park, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1982, Ser. No. 338,696
Int. Cl.³ F41G 3/00
U.S. Cl. 434—12 13 Claims



1. An apparatus for simulating anti-armor training with gunner controlled guided missiles comprising:

means for simulating a moving target in a realistic scenario;

a simulated weapon;

means for sensing a gunner's aiming error with respect to said target;

means for monitoring utilization of said simulated weapon;

means for simulating optical and audio transient effects of utilization of said weapon;

a controllable stepper motor operably connected to drive said target simulating means;

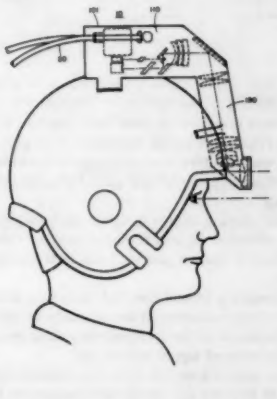
controlling means having a first output to said controllable stepper motor, a second output to said monitoring means, a plurality of outputs to said transient effects simulating means, a first input from said sensing means, an input from said monitoring means, and an input from said simulated weapon, said controlling means having knowledge of said simulated target position and said simulated weapon's flight characteristics, and utilizing said knowledge and said inputs to provide real time simulation of said missile's flight.

4,439,157

HELMET MOUNTED DISPLAY PROJECTOR

Denis R. Breglia, Altamonte Springs, Fla.; Daniel R. Lobb, Kent, England, and Archer M. Spooner, Orlando, Fla., assignors to The United states of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1982, Ser. No. 374,575
Int. Cl.³ G09B 9/08
U.S. Cl. 434—40 8 Claims



1. An improved apparatus for visual simulation utilizing a domed retroreflective screen, a dual channel computer image generator, with one channel dedicated to a high resolution area of interest and a second channel dedicated to a lower resolution instantaneous field of view, a laser modulation and line scanning system for outputting a plurality of laser line scans in accordance with said computer image generator channels, a plurality of flexible coherent fiber optic bundles for transmitting said line scans, a projector housing operably connected to said fiber optic bundle, and a helmet to be worn on an observer's head adapted for mounting said housing thereon, wherein said improvement comprises:

an optical system mounted within said projector housing comprising,

means for generating frame scan for each projected laser line scan, connected to receive transmission from said laser modulation and line scanning system via said fiber bundles, said generating means including means for combining said laser line scans in a single projected frame such that a projected image is formed having a high resolution area of interest bounded by a lower resolution instantaneous field of view;

means for controlling said scan generating means operably

connected to receive control signals from said computer image generator; and

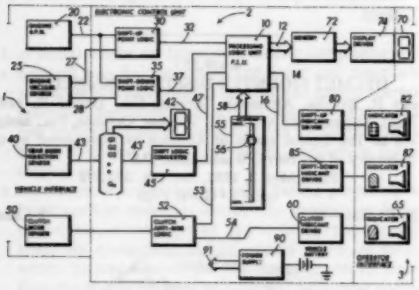
means for projecting said laser raster through a wide angle onto said domed screen operably positioned to receive said raster from said scan generating means.

4,439,158

TEACHING INDICATOR FOR EFFICIENT VEHICLE GEARSHIFT OPERATION

Harold J. Weber, P.O. Box 315, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Jan. 7, 1982, Ser. No. 337,585
Int. Cl.³ G09B 9/04
U.S. Cl. 434—71 **25 Claims**



1. Driving aid apparatus coupled with a motor vehicle means including manual gearshift transmission means, wherein the apparatus combines at least two dynamic signals provided by means responsive to the condition of engine speed, gearing selection, and effective load coupling, to provide driver indication for obtaining opportune gearshift changes, furthermore comprising:

signal combining means coupled with said dynamic signals and effective to combine the instant values thereof to produce at least a gearshift indicant signal output therefrom;

predetermining means coupled with said combining means and effective therewith to variously modify the effective combination of the dynamic signals in proportion to any predetermined signal values; and,

indicator means coupled with said indicant signal and effective to provide the driver with indication for at least one of impending upshift, impending downshift, and a figurative signal of which gearing range should be engaged.

4,439,159

SKETCHING AID

James B. Hunter, 313 Echo Valley La., Newtown Square, Pa. 19073

Continuation of Ser. No. 218,450, Dec. 19, 1980, abandoned. This application Jan. 21, 1983, Ser. No. 459,984
Int. Cl.³ G09B 11/06
U.S. Cl. 434—85 **17 Claims**

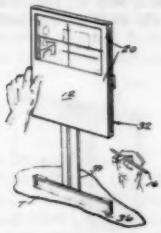
1. A sketching aid comprising:

an opaque frame member having a first portion thereof large enough to be readily grasped by a human hand, and small enough to be readily supported by a human hand alone, and a second portion distinct from said first portion and comprising means defining an opening therein extending from one side to the other;

a rigid transparent plate;

means for operatively attaching said rigid transparent plate to said opaque frame, and within said frame opening, so that said plate is held stationary with respect to said frame, and so that one can view through the frame opening and transparent plate objects on one side of the plate from the other side of the plate;

means associated with said frame for holding a transparent drawing film of substantially the same size as said rigid



transparent plate in face-to-face contact with said plate; and

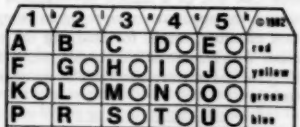
storage means for holding a supply of transparent drawing films, said storage means formed in said first portion of said opaque frame member.

4,439,160

VISUAL COMMUNICATION SYSTEM

Ralf Krempel, 2400 Pacific Ave., San Francisco, Calif. 94115

Filed Jul. 26, 1982, Ser. No. 401,627
Int. Cl.³ G09B 19/00
U.S. Cl. 434—170 **2 Claims**


1 2 3 4 5 ©1982
A B C D E red
F G H I J yellow
K L M N O green
P R S T U blue
V W X Y Z orange
Q - 1 green - 2 orange
KREMPEL CODE - VISUAL COMMUNICATION SYSTEM

1. A visual communication device comprising;

a code carrier means divided into a plurality of rows and columns;

each of said rows being designated by a different color indicium;

each of said columns being designated by a different number indicium;

letters of an alphabet located in said rows and columns of said code carrier means;

whereby each of said letters can be designated by a quantity of symbols of the same color as, and equal in number to, the color and number indicia which designates the row and column on the code carrier means where the alphabet letter is located.

4,439,161

TAUGHT LEARNING AID

Richard H. Wiggins, Dallas; George Doddington, Richardson, both of Tex., and Craig J. Cato, Littleton, Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 11, 1981, Ser. No. 301,090
Int. Cl.³ G09B 23/02
U.S. Cl. 434—201 **16 Claims**

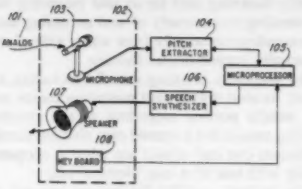
1. A learning aid comprising:

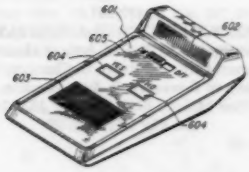
control means having defined therein a response data set and a set of messages, said control means having

means for selecting a first response data from said set of response data in response to an operator generated problem, and for selecting a second response data from said set of response data in response to an operator generated evaluation input,

memory means for storage of said response data set;

said means for selecting a first response data including means for randomly choosing an incorrect response data from said response data set as said first response;





said means for selecting a second particular response data including means for evaluating if said first response data is appropriate with said operator generated problem; and

operator interface means communicating with said control means, said operator interface means having

means for receiving said operator generated problem, for receiving said operator generated evaluation data, and for communicating to the operator said first response data and said second response data.

4,439,162

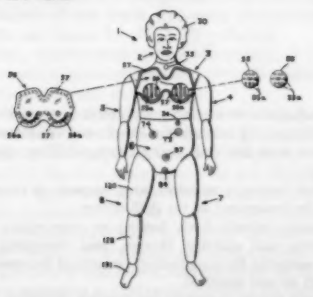
TRAINING MANIKIN FOR MEDICAL INSTRUCTION

George Blaine, 5830 Leonardo St., Coral Gables, Fla. 33146

Filed Jan. 21, 1982, Ser. No. 341,319

Int. Cl.³ G09B *23/34*

U.S. Cl. 434—268 **20 Claims**



1. An instructional training manikin comprising a body including a torso, legs, arms and a head, interchangeable male and female breasts including means for detachable connection of said breasts to said body, said body further including male and female sexual organs adapted for selective operative association with said body, said torso being hollow and including fluid reservoir means therein, said body being provided with opening means permitting flow and fluid to and from said reservoir means for simulating various body functions and treatments.

4,439,163

OUTBOARD MOTOR WITH INTERLOCK MECHANISM FOR TRANSMISSION AND FOR STARTING MECHANISM

Dennis N. Burmeister, Libertyville, Ill.; Thomas A. Busse, Bristol, Wis., and Wesley C. Jones, Antioch, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 1, 1980, Ser. No. 192,917

Int. Cl.³ F02N *17/00*

U.S. Cl. 440—86 **14 Claims**

8. An outboard motor comprising a steerable and tiltable propulsion unit including an engine having a timer plate movable from an idle speed setting to a range of advanced speed settings, a transmission shiftable between a neutral position and a drive position, and means on said timer plate for preventing shifting of said transmission to neutral when said timer plate is at a setting advanced from the idle setting.

4,439,164

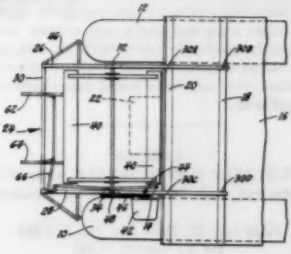
PADDLE WHEEL KIT FOR PONTOON BOAT

Don D. Daugherty, 9535 Five Mile Rd., Northville, Mich. 48167

Filed Aug. 27, 1981, Ser. No. 296,819

Int. Cl.³ B63H *1/04*

U.S. Cl. 440—91 **3 Claims**



3. A method for converting a pontoon boat having a pair of spaced, parallel, elongated pontoons, a frame mounted on the pontoons, engine support means mounted on the frame between the pontoons, a steering control member mounted on the frame and a steering linkage connected to the steering control member, comprising the steps of

removing the engine support means,

removably mounting a paddle wheel power assembly including support means having spaced pair of legs, a cross-member secured to and extending between one end of the pair of legs, bearing means, a rotatable shaft, a paddle wheel mounted on the shaft, engine means drivingly connected to the shaft and rudder means mounted on the cross member rearwardly of the paddle wheel, by attaching the spaced pair of legs of the support means to the frame, and

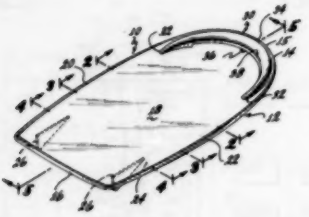
connecting the steering linkage of the rudder means for moving the rudders means between selected steering positions.

4,439,165

AQUATIC BODY BOARD

Andrew M. Rothstein, Santa Monica, Calif., assignor to Harold Louis Rothstein and Arthur Rothstein, both of Los Angeles, Calif.

Filed Aug. 17, 1981, Ser. No. 293,391
Int. Cl.³ A63C 15/05
U.S. Cl. 441—74 6 Claims



1. In a relatively thin substantially planar body board of the type used for supporting a rider's torso in ocean surf and having an upper side, an underside, a forward end and a rear end, and a pair of lateral edges, the improvement comprising:

a substantially rigid arcuate control handle member having two handle ends and a convex intermediate portion;

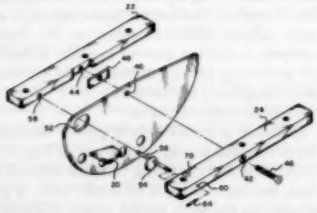
said arcuate control member being secured in fixed spaced relationship to said upper side between said forward end and said rear end of the body board, said arcuate control member spanning the greater part of the width of said board between said lateral edges with said convex intermediate portion oriented towards the forward end of the body board and said handle ends extending rearwardly and terminating substantially flush with said upper side to form a substantially smooth transition from the upper surface of said board to the upper surface of the control handle such that a rider's hands can easily slide from said lateral edges onto and along said arcuate member at a continuously selectable point between said two handle ends to obtain variably optimal leverage for positive steering control over said body board under shifting load and surf conditions.

4,439,166

ADJUSTABLE WATER SKI FIN AND WING

Ralph A. Maxwell, Box 245, Sweetwater, Hammonton, N.J. 08037

Filed Sep. 21, 1981, Ser. No. 303,883
Int. Cl.³ A63C 15/00
U.S. Cl. 441—79 8 Claims



1. An adjustable water ski fin and wing assembly comprising:

a shallow substantially rectangularly shaped mounting means, said mounting means being adapted to overlie an elongated longitudinally extending slot in the rear end of a water ski;

means for securing said mounting means to the upper surface of said ski;

a fin including a top edge lying substantially totally within said mounting means and extending downwardly therefrom through said slot;

a pivot pin located adjacent said top edge of said fin for pivotally fastening said fin to said mounting means, said pin extending transversely of said mounting means;

a wing extending outwardly from either side of said fin and substantially perpendicular thereto;

means for manually pivoting said fin including a first cam element located within said mounting means and including a handle portion extending to the exterior of said mounting means and a second cam element carried by said fin adjacent one end of said top edge in cooperative relationship with said first cam element, and

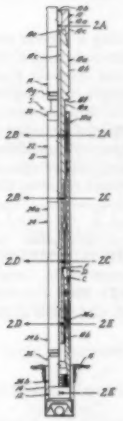
means for locking said fin to prevent pivotal movement thereof.

4,439,167

SHOCK ABSORBER ASSEMBLY

Thomas R. Bishop; Archie W. Peil, both of Houston; Wayne A. Kovar, Missouri City, and Roger D. Chancey, Humble, all of Tex., assignors to Bowen Tools, Inc., Houston, Tex.

Filed Mar. 1, 1982, Ser. No. 353,624
Int. Cl.³ E21B 17/00
U.S. Cl. 464—20 7 Claims



1. A shock absorber assembly adapted to be used with a drill string for dampening intermittant shocks and vibrational forces encountered with the drill string during drilling operations, comprising:

a mandrel having a mandrel bore adapted to be mounted with the lower end of the drill string;

an elongated tubular body having an open upper end for receiving said mandrel therein, said elongated tubular body mounted for longitudinal reciprocal movement with respect to said mandrel;

dampening means including an annular chamber and flex means for dampening the intermittant shocks and vibrational forces;

said annular chamber formed between said mandrel and said elongated tubular body;

said flex means being an impervious wall forming a part of said mandrel adjacent said annular chamber for inward flexing of said impervious wall toward said mandrel bore of said mandrel; and,

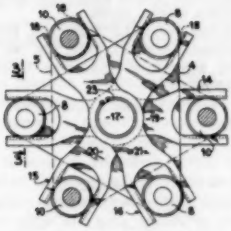
said annular chamber adapted to be filled with a compressible fluid whereby the intermittant shock and vibrational forces on said mandrel cause compression of said compressible fluid within said annular chamber whereby said compressed fluid exerts a uniform force within said annular chamber along the substantial length of said flex means thereby causing flexure of said flex means to effectuate the dampening of the intermittant shock and vibrational forces encountered with the drill string.

4,439,168

COUPLING BETWEEN TWO ROTARY SHAFTS

Michel Orain, Conflans Ste Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Mar. 25, 1981, Ser. No. 247,504
Claims priority, application France, Mar. 31, 1980, 80 07156
Int. Cl.³ B61C 9/00; F16D 3/30
U.S. Cl. 464—69 7 Claims



1. A coupling between a first rotary shaft and a second rotary shaft, said coupling comprising a first plate coaxial with and rigid with said first shaft, a second plate coaxial with and rigid with said second shaft, said first and second shafts having a common axis under ideal conditions,

means for providing for relative axial telescopic displacement of said shafts along said common axis, angular displacement of said shafts, and radial displacement of said shafts, said means for providing including

a floating intermediate device comprising at least three levers and a center articulation pivotally assembling said levers, and further including

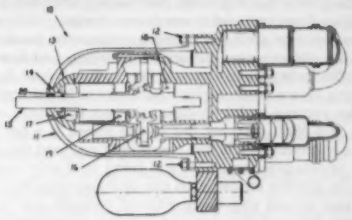
means for connecting the opposite end portions of said levers to said plates, one end portion of each lever being connected to one plate, the other end portion being connected to the other plate, means for providing movement of said connecting means within said end portions in a radial direction relative to said common axis, said means for providing movement in a radial direction including rollers which roll in a radial direction engaged within the end portions of said levers, said end portions having track means extending in said radial direction for receiving said rollers, said connecting means including journals on which said rollers are mounted and which are connected to said plates, at least one of said rollers mounted on a journal being provided with means for preventing movement of said roller along the length of said journal, said journals extending parallel to said common axis under said ideal conditions when said first and second shafts are aligned.

4,439,169

PRESSURE CONTAINMENT DEVICE

Roelf J. Meijer; Robert J. Brown, and Benjamin Ziph, all of Ann Arbor, Mich., assignors to Stirling Thermal Motors, Inc., Ann Arbor, Mich.

Filed Aug. 6, 1982, Ser. No. 405,750
Int. Cl.³ F16C 35/02
U.S. Cl. 464—170 4 Claims



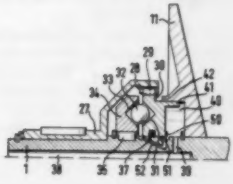
1. A device for containment of drive mechanism housing pressure in a Stirling engine having a variable swashplate drive mechanism connected to an output shaft comprising: a rotating shaft seal rigidly connected to said drive mechanism housing and slidably connected to said output shaft located therein, such that a seal is formed therebetween; a thrust bearing for supporting said output shaft rigidly connected to said drive mechanism housing; and a pressure hull enclosing said drive mechanism housing having a first end slidably connected to said drive mechanism housing extending therethrough and a second end rigidly connected to said drive mechanism housing.

4,439,170

INFINITELY VARIABLE CONE PULLEY TRANSMISSION

Herbert K. Steuer, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers, GmbH & Co. KG, Bad Hamburg, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 281,924
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028490
Int. Cl.³ F16H 11/04
U.S. Cl. 474—28 9 Claims



1. In an infinitely variable cone pulley transmission including a driving shaft and a driven shaft, a first and a second pulley mounted on said driving and driven shafts, respectively, an endless transmission member trained about said pulleys for transmitting driving torque from said driving shaft to said driven shaft; each pulley being formed of first and second pulley discs; each said first pulley disc being torque-transmittingly and axially slidably mounted on the respective said shaft; hydraulic means for setting and maintaining each said first pulley disc by hydraulic pressure in an axial position corresponding to a desired transmission ratio between the driving and the driven shafts; each said second pulley disc being torque-transmittingly and axially immovably mounted on the respective said shaft; a torque sensor mounted on at least one of

said shafts adjacent a said second pulley disc for receiving and transmitting a torque; said torque sensor including pressing means mounted for axial displacement as a function of said torque and for generating load-dependent pressing forces; a first ring forming part of said pressing means and being torque-transmittingly and axially immovably mounted on the shaft carrying the torque sensor; torque transmitting means for transmitting torque from one said ring to the other; said torque transmitting means comprising cooperating first and second camming surfaces oriented towards one another; roller members in engagement with the camming surfaces for transmitting forces from one camming surface to the other; said first camming surface being carried by said first ring; and load-dependent valving means arranged for displacement by said pressing means for varying said hydraulic pressure; the improvement wherein said shaft carrying the torque sensor is a one-piece shaft; the improvement further comprising a second ring forming part of said pressing means and being relatively rotatably and axially slidably mounted on the shaft carrying the torque sensor; said second ring being situated between said second pulley disc and said first ring and forming a movable part of said valving means; said second camming surface being provided on said second ring, whereby said second ring is axially displaceable with respect to said first ring as a function of a torque applied to said second ring; and means operatively coupled with said second ring for introducing said torque into or taking said torque out of said transmission with the intermediary of said second ring.

4,439,171

DERAILLEUR MECHANISM

Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

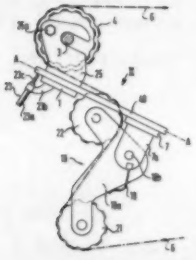
Continuation of Ser. No. 936,569, Aug. 22, 1978, Pat. No. 4,231,264. This application Nov. 4, 1980, Ser. No. 203,969

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739543

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.³ F16H 9/00

U.S. Cl. 474—80 **1 Claim**



1. A derailleur mechanism for a chain on a bicycle and like vehicle which chain is selectively engageable with a plurality of chain wheels having a common axis of rotation comprising:

(A) a support element,

(B) mounting means for mounting said support element on said vehicle in a fixed position relative to the common axis of rotation of said chain wheels,

(C) an elongated link member,

(D) an elongated guide member, each of said link member and guide member including first and second longitudinal end portions,

(E) first and second pivot means respectively connecting said first longitudinal end portions to said support element for angular movement of said link member and guide member relative to said support element,

(F) a carrier element,

(G) third and fourth pivot means respectively connecting said second longitudinal end portions to said carrier element for angular movement of said link member and guide member relative to said carrier element,

(H) fifth pivot means connecting respective crossing portions of said link member and guide member intermediate said first and second end portions thereof for relative angular movement of said link member and guide member,

(I) said pivot means defining respective pivot axes extending in a common direction,

(2) three of said pivot means preventing significant relative translatory movement of the connected said link member and guide member and support element and carrier element transversely of the respective pivot axes,

(3) the other two of said pivot means permitting said translatory movement,

(I) a chain mover element mounted on said carrier element, and

(J) operating means for moving said link member and guide member relative to each other about the axis of said fifth pivot means.

4,439,172

CHAIN GEAR AND CRANK MOUNTING ASSEMBLY

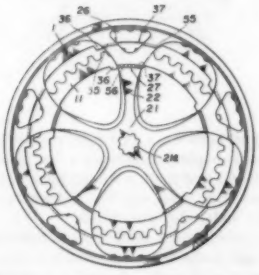
Takashi Segawa, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 972,372, Dec. 22, 1978, abandoned. This application Mar. 31, 1981, Ser. No. 249,476

Claims priority, application Japan, Dec. 28, 1977, 52-157659; Feb. 27, 1978, 53-25550

Int. Cl.³ F16H 55/30, 55/12

U.S. Cl. 474—160 **4 Claims**



1. A chain gear and crank assembly for a bicycle comprising a crank arm having a shaft, a larger and a smaller diameter chain gear, said larger and smaller diameter chain gears having a different number of peripheral teeth, and an adapter for mounting said chain gears to said crank arm, each of said chain gears being formed in an annular shape and having at an inner periphery thereof engaging projections extending radially inwardly which function as first mounting means for mounting each said chain gear to said adapter, said adapter comprising a boss having a bore insertably engageable with said shaft of said crank arm, a plurality of legs extending radially outwardly from said boss, and at least one annular member connecting the radially distal ends of said legs, each of said legs having respective mounting portions for each of said chain gears, said respective mounting portions being axially offset for the respective chain gears and each containing a second mounting means comprising grooves respectively insertably engageable with said engaging projections of said first mounting means of said chain gears for fixing said chain gears axially offset from one another to said adapter, said annular member having a larger diameter than the diameter of said larger diameter chain gear

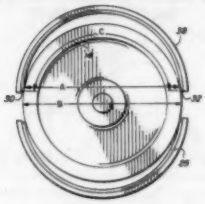
and being displaced axially from said larger diameter chain gear to function as a chain guide.

4,439,173

REPLACEABLE LAGGING FOR DRUM-TYPE PULLEYS

Peter Fokos, 1624 E. Redfield Dr., Tempe, Ariz. 85283

Filed Dec. 17, 1981, Ser. No. 331,525
Int. Cl.³ F16H *55/48, 55/36*
U.S. Cl. 474—191 **5 Claims**



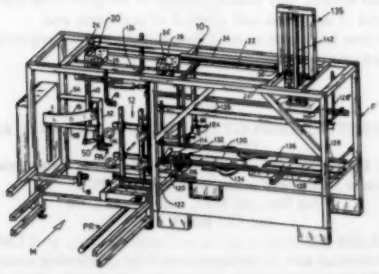
1. A replaceable lagging section for a drum-type pulley of the type having a continuous cylindrical outer surface, said lagging section comprising an arcuate shell being a segment of a cylinder having an arcuate inner surface generally conforming to the exterior of said drum, an outer surface, opposite lateral ends and opposite longitudinal edges, said shell in an unstressed condition having a chord dimension measured on a straight line between the opposite longitudinal edges of said shell less than a corresponding dimension of the drum to which the shell is to be applied, said shell further having a facing material applied to the outer surface of said shell whereby said shell may be tightly engageable about said drum by expanding the longitudinal edges and tack welded in place at selected locations at said shell in substantially abutting relationship with other similar sections to provide a substantially continuous facing around said pulley.

4,439,174

BOX-ERECTING MACHINE

Edward J. Derderian, 4514 N. Wilson, Fresno, Calif. 93704

Filed Aug. 24, 1981, Ser. No. 295,530
Int. Cl.³ B31B *5/02*
U.S. Cl. 493—125 **4 Claims**



1. A box-erecting machine comprising:

A. a machine frame including means defining a linear path extended through said machine and a box blank receiving station disposed at one end of said path;

B. box blank delivery means for delivering squared box blanks to said receiving station, said blanks being characterized by depending leading and trailing minor flaps and depending major flaps extended between the minor flaps;

C. a glue applicator station, a major flap-folding station, and a compression station arranged in mutually spaced relation and aligned within said path;

D. a reciprocating carriage frame including a rear pusher assembly for advancing box blanks from said receiving station to a rest position and a leading box blank pusher assembly for advancing box blanks from said rest position toward said compression station along said linear path;

E. means supporting said carriage for rectilinear motion including a pair of rails arranged in mutual parallelism and extended across said box blank receiving station, said glue applicator station, said major flap folding station and terminating. adjacent to said compression station, a pair of mutually spaced interconnected trucks mounted on said rails and supported thereby for fore-and-aft rolling motion supporting said carriage frame for reciprocation along said rails, and means including a first air motor for driving said trucks in rolling motion along said rails;

F. a trailing minor flap tucker assembly mounted on said rear pusher assembly for forwardly infolding the trailing minor flap for each of said blanks including a pair of mutually spaced fingers, each finger of said pair being characterized by integral, normally related base and distal segments supported for pivotal displacement from an initial position to an operative position, means for displacing the distal segment from said initial position to said operative position wherein the distal segment is caused to engage the trailing minor flap and infold the flap beneath said box blank, said fingers being disposed in supporting relation with said blank when disposed in said operative position;

G. a second air motor and drive linkage interconnecting said fingers and said second air motor for pivotally displacing said fingers from said initial to said operative positions; and

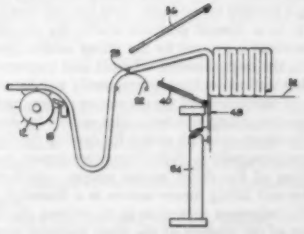
H. means for rearwardly infolding the leading minor flap to a box-closing disposition comprising a leading minor flap tucker assembly including a rigid tongue of an arcuated configuration affixed to said frame and supported within said linear path adjacent to said glue application station over which each box blank is advanced as it is advanced from said receiving station to said rest position.

4,439,175

APPARATUS FOR FORMING THERMAL INSULATION BLOCKS

Anthony E. Cimochowski, Sedalia, and Brad A. Heffelmire, Littleton, both of Colo., assignors to Manville Service Corporation, Denver, Colo.

Filed Oct. 13, 1981, Ser. No. 311,104
Int. Cl.³ B31D *5/04;* **B65H** *45/20*
U.S. Cl. 493—413 **12 Claims**



1. Apparatus for forming blocks of folded fibrous materials comprising:

(a) a planar support member having first and second faces;

(b) means for feeding a strip of fibrous material in a direction

generally aligned with the first face of said planar support member;

(c) a first folder vane which rotationally oscillates about a first generally fixed axis that is positioned adjacent the first face of said support member, said first folder vane engaging said strip of fibrous material and creating a fold therein by deflecting the material so that it extends toward said first face;

(d) a second folder vane which rotationally oscillates about a second generally fixed axis that is positioned adjacent the second face of said support member, said second vane engaging said strip of fibrous material and creating a fold therein by deflecting the material so that it extends away from said first face, said first and second folder vanes alternating to form a block of folded fibrous material with a centerline intermediate said folds;

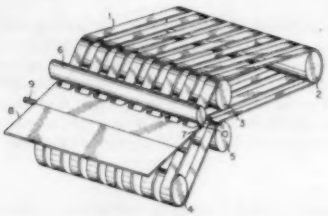
(e) a support vane which reciprocates in a plane that is generally perpendicular to said planar support member between a first position in which the support vane is in a material non-engaging position on one side of the block's centerline and a second position where at least a portion of said support vane extends to the other side of the block's centerline into engagement with said fibrous material to support said previously formed folds when the first and second folder vanes are being disengaged therefrom.

4,439,176

APPARATUS FOR FOLDING SHEET MATERIAL, PREFERABLY LAUNDRY

Jorn M. Jensen, Bern, Switzerland, assignor to Ejnar Jensen & Son A/S, Bornholm, Denmark

Filed Mar. 25, 1982, Ser. No. 361,770
Claims priority, application Denmark, Mar. 25, 1981, 340/81
Int. Cl.³ B65H *45/14*
U.S. Cl. 493—419 **4 Claims**



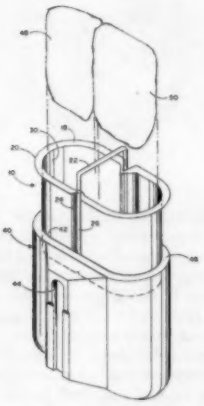
1. In apparatus for folding flexible sheet material, for example, pieces of laundry, along a folding line perpendicular to the direction in which the sheets are conveyed, said apparatus including conveyor means upon which the sheet to be folded is placed and conveyed thereby from an inlet station to at least one folding station, said folding station including lifting means for lifting a portion of the sheet from the conveyor means and moving it to a second position above the conveyor means where the sheet is pressed by the lifting means against a backing means, the improvement wherein said conveyor means at said folding station declines downwardly and forwardly in the direction of movement of the conveyor means; and said backing means comprising friction roller means for engaging and moving the sheet material; means for driving the friction roller means synchronously with the conveyor means so that a bottom portion of the roller means against which the sheet is pressed by said lifting means moves in a direction opposite to that of the conveyor means so as to reverse the direction of movement of the portion of the sheet material located downstream thereof, and there is provided downstream of the folding station support means above the downwardly declining portion of the conveyor means for receiving the leading portion of the sheet to be folded which has moved past said folding station, the rear margin of which is to be pressed by said lifting means against said roller means, the friction roller means when said lifting means presses the rear margin of said leading portion thereagainst reverses the direction of movement of the leading portion of the sheet to form a fold thereat and direct the portion of the sheet being folded down upon the downwardly declining portion of the conveyor.

4,439,177

ROTOR BUCKET LINER

George E. Conway, Newark, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 26, 1981, Ser. No. 315,091
Int. Cl.³ B04B *15/02*
U.S. Cl. 494—20 **8 Claims**



1. In a centrifuge rotor for operation in a centrifuge, a combination comprising:

a swinging bucket attached to said rotor;

a thin-walled liner mounted in said bucket, said liner having an interior cavity for holding at least two flexible fluid sample holding bags;

a channel indented along the exterior sides and the bottom of said liner forming a protrusion in the interior of said liner defining a separation ridge therein;

said separation ridge dividing said liner cavity into two compartments, each adapted for receiving one of said sampleholding bags;

a handle attached to said liner for removing said liner from said bucket, said handle having an integral strap configured to snap into said channel of said liner; and

said liner having an outside flange at the upper periphery of said cavity of said liner.

4,439,178

SEALLESS CENTRIFUGE PROCESSING CHANNEL AND TUBE SYSTEM

Alfred P. Mulzet, Princeton, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,904
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—85 **5 Claims**

1. A limited use 2ω sealless centrifuge processing member and tube systems, in which a processing channel is clamped to a lumen tube which interconnects to nonrotating support structure via a stationary clamp—characterized—

(a) a processing member;

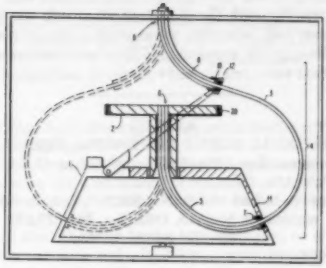
(b) a lumen tube operatively connected to said processing member, having a processing member end and a stationary clamp end;

(c) a first reinforcing tube encasing a first portion of said

lumen tube at the processing member end, having also a free end;

(d) a second reinforcing tube encasing a second portion of said lumen tube at the stationary clamp end, having also a free end;

(e) a first reinforcing tube thrust drive bearing at the free end of said first reinforcing tube; and



(f) a second reinforcing tube thrust drive bearing at the free end of said second reinforcing tube;

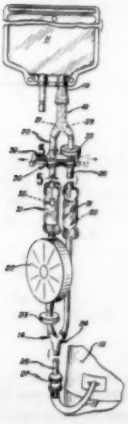
whereby the system may be mounted in a 2ω sealless centrifuge with a minimum of threading and with portions of said lumen tube supportable by said reinforcing tubes and thrust drive bearings during centrifuge operation.

4,439,179

DUAL TUBING CLAMP

Arthur Lueders, Mundelein, and Marc Bellotti, Winnetka, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 16, 1982, Ser. No. 349,274
Int. Cl.³ A61M *1/03*; F16L *55/14*
U.S. Cl. 604—34 **24 Claims**



1. A flow control clamp for use in a peritoneal dialysis system in which a flow path having a pair of tubular branches is provided to connect a patient to a source of dialysis solution, with one branch for filling the peritoneal cavity with solution and one branch for draining the peritoneal cavity; said clamp selectively and alternatingly preventing flow in at least one branch and for preventing simultaneous flow in both branches, said clamp comprising an elongated slide member that includes a body portion having spaced ribs to define an open branch-receiving opening adjacent each end of said ribs and a narrowed branch-grasping and closing slot intermediate said openings between the ribs, and slide housing means constructed to retain said slide member in sliding relation therewith, said housing means having a pair of aperture means through which said branches pass, said aperture means being spaced apart a distance less than the distance between the open branch-receiving openings so as to prevent simultaneous alignment between the branches and both open branch-receiving openings, so that both branches cannot be open at the same time.

4,439,180

FLOWABLE SUBSTANCE APPLICATOR WITH PLUNGER PROJECTION

Larry H. Kline, 18 Broad St., Suite 805, Charleston, S.C. 29401

Continuation-in-part of Ser. No. 300,037, Sep. 8, 1981, Pat. No. 4,365,631. This application Sep. 17, 1982, Ser. No. 419,223
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.³ A61M *3/00*
U.S. Cl. 604—54 **24 Claims**

1. A device for holding a flowable substance and applying said flowable substance to an orifice of a body comprising an applicator section comprising:

a. a nozzle, sized and shaped to fit within said orifice of said body, with a sloped base, an elongated section, and a plurality of openings in said sloped base and said elongated section;

b. a plunger section within said device, sized and shaped to fit within said sloped base and said elongated section of said nozzle, extending from said sloped base of said nozzle toward the tip of said nozzle;

c. said nozzle and said plunger section being spaced apart to form a cavity which is sized and shaped to fit between said nozzle and said plunger section from said sloped base through said elongated section, said cavity operative to hold said flowable substance; and

d. a plunger projection secured to said plunger section and operative to move said plunger section toward the interior wall of said nozzle,

whereby when said nozzle is placed in said orifice and said plunger projection is pressed toward said tip of said nozzle, said flowable substance will be forced from said cavity through said plurality of openings in said nozzle and out from said device into said orifice.

4,439,181

POLYOL-HORMONE MIXTURE FOR USE IN CHRONIC PARENTERAL HORMONE ADMINISTRATION

Perry J. Blackshear, Cambridge; John L. Palmer, Watertown, both of Mass., and Thomas D. Rohde, Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jan. 26, 1981, Ser. No. 228,097
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—56 **14 Claims**

1. A method of maintaining the fluidity of protein solutions for parenteral administration at a low flow rate to a chronically ill patient suffering from a protein-deficiency disease from a drug delivery device that depends on the fluidity of the infu-

sate for proper functioning, without loss of biological activity, which method comprises:

(A) dissolving an effective amount between about 10 and 90 percent by weight/volume, sufficient to prevent precipitation of the protein, of a biocompatible C-4 to C-18 polyol in the protein solution prior to injection into the drug storage chamber of the delivery device, and

(B) charging the drug storage chamber of the drug delivery device with said protein-polyol solution.

4,439,182

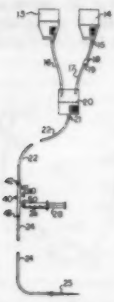
VALVULAR INFUSION DEVICE

Shing S. J. Huang, 521 Cape May St., Englewood, N.J. 07631

Filed Mar. 15, 1982, Ser. No. 357,834

Int. Cl.³ A61M 5/00

U.S. Cl. 604—85 **17 Claims**



1. A valvular infusion device for the administration of a parenteral fluid and at least one supplemental fluid or drug for intravenous infusion to a patient, said valvular infusion device having non-movable valve means positioned in a valve chamber for the one-way flow of the supplemental fluid into the parenteral fluid stream, said device comprising:

a. a main conduit for generally the continual flow therethrough of a parenteral fluid, said main conduit being generally an elongated, walled passage having an interior and an exterior wall surface, an inlet end and an outlet end, said main conduit further having at least one aperture which extends through said passage wall from said interior to said exterior wall surface and which is disposed between said inlet end and said outlet end of said conduit,

b. at least one second conduit extending from and being in communication with said main conduit for receiving and the flow therethrough of a supplemental fluid or drug, said second conduit being a walled passage having an inlet portion, an outlet portion and an inwardly extending stricture therebetween, said outlet portion of said second conduit extending generally outwardly from and congruous with said main conduit and being disposed about said aperture in said main conduit,

c. a valve chamber in said second conduit for receiving a non-movable, one-way valve therein, said chamber being disposed at said outlet end of said second conduit in adjacent proximity and about said aperture of said main conduit said valve chamber being generally defined by the exterior surface of said wall structure about said aperture of said main conduit exposed within said second conduit and said inwardly extending stricture within said second conduit, and,

d. a non-movable, compressible and resilient valve means for permitting one-way flow of a supplemental fluid or drug from said inlet portion of said second conduit through said valve chamber and through said aperture in said main conduit wall and into said main conduit, said valve means being located in said valve chamber in a sealing, contact configuration with said second conduit stricture and said exterior wall structure surface of said main conduit disposed within said valve chamber, whereby, a supplemental fluid or drug under pressure introduced into said inlet portion of said second conduit interrupts said sealing contact of said valve means by compressing said valve means into itself in said valve cavity, and to, thereby, permit the passage of the supplemental fluid or drug, between the cavity walls and the valve means by compressing it, and through said main conduit wall aperture for transfer with the parenteral fluid into the vein of a patient, and, whereby, subsequent to the release of the pressure of the supplemental fluid said compressible and resilient valve reseals said stricture in said second conduit.

4,439,183

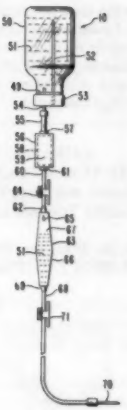
PARENTERAL AGENT DISPENSING EQUIPMENT

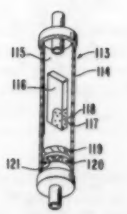
Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 310,047, Oct. 9, 1981. This application May 13, 1982, Ser. No. 377,831

Int. Cl.³ A61M 5/14

U.S. Cl. 604—85 **6 Claims**





1. A formulation chamber for use in a parenteral delivery system, comprising:

(a) a wall surrounding an internal lumen;

(b) an inlet for admitting a fluid into the chamber;

(c) an outlet for letting a fluid leave the chamber; and,

(d) an erodible delivery system in the chamber, comprising:

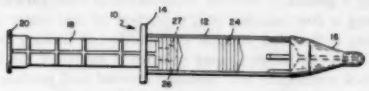
(1) a matrix formed of a parenterally-acceptable material that erodes in the presence of a parenteral fluid over time, and;

(2) a beneficial agent dispersed in the matrix that is delivered by the erodible delivery system into parenteral fluid that enters the formulation chamber.

4,439,184
TWO-DOSE SYRINGE

Robert P. Wheeler, Keene, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.

Filed May 3, 1982, Ser. No. 373,867
Int. Cl.³ A61M 5/00
U.S. Cl. 604—90 18 Claims

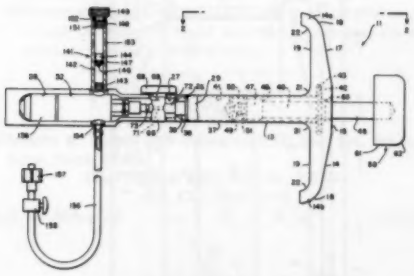


1. A syringe for delivering two separated bodies of fluid, said syringe comprising:
- a first piston made of a compressible, resilient material for separating said two bodies of fluid;
- a second piston for pushing said two bodies of fluid out of said syringe; and
- a walled fluid chamber having a no-pass zone in which said pistons can slide and which has a cross section shaped so that each of said pistons can conform to its wall, preventing the passing of fluid around said pistons when they are in said no-pass zone; an output zone to direct fluid pushed out of said syringe by said pistons; and a bypass zone, for receiving said first piston, which connects said no-pass and output zones and which has at least one ridge projecting into said fluid chamber from its wall to push a portion of said first piston away from said wall when said first piston enters said bypass zone so that the fluid between said first and second pistons can pass around said first piston to said output zone.

4,439,185
INFLATING AND DEFLATING DEVICE FOR VASCULAR DILATING CATHETER ASSEMBLY

Ingemar H. Lundquist, Oakland, Calif., assignor to Advanced Cardiovascular Systems, Inc., Mountain View, Calif.

Filed Oct. 21, 1981, Ser. No. 313,383
Int. Cl.³ A61M 29/00, 25/00
U.S. Cl. 604—97 16 Claims

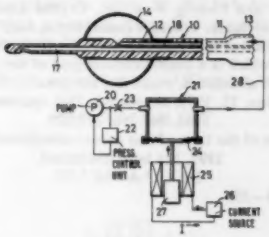


1. In an inflating and deflating device adapted to be used by a human hand, a housing, a syringe carried by the housing, said syringe comprising a syringe body mounted in the housing and having an outlet through which liquid can pass, a piston slidably mounted in said body and forming a sealing engagement with the body, a piston rod secured to said piston and extending out of said body, a tubular member, connecting means carried by the housing connecting said tubular member to the outlet of said syringe body, said connecting means including valve means for controlling the flow of fluid between the outlet of the syringe body and the tubular member, pressure gauge means carried by the housing and in communication with the tubular member for measuring the pressure of the fluid in the tubular member and handle means carried by the housing and secured to said syringe for causing relative movement between the piston and the syringe body, said handle means including first and second portions movable with respect to each other, said first portion being secured to one of said piston rod and said syringe body and the other said portions being secured to the other of said piston rod and said syringe body, said first portion being of a size so as to be adapted to engaged by all of the fingers of the hand and the second portion being adapted to be engaged by the palm of the hand during the time that the fingers of the hand are engaging the first portion whereby a force to cause relative movement between the piston and the syringe body can be created by the hand.

4,439,186
DILATION DEVICE

Adolf Kuhl, Finkenhof 3b, D-3000 Hannover 61, Fed. Rep. of Germany

Filed Aug. 17, 1982, Ser. No. 408,831
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138620
Int. Cl.³ A61M 25/00; A61B 19/00
U.S. Cl. 604—99 8 Claims



1. A dilation device for dilating or closing blood vessels and other body cavities comprising:
- a catheter having a radially expandable dilation element, said element having a volume-pressure characteristic including a first zone in which the rate of increase in volume with increasing pressure is relatively low, a second zone in which said rate is substantially higher and substantially linear, and an inflection point separating said first and second zones, and
- a source of fluid pressure connected to said catheter,
- control means for said fluid pressure source for producing a pulsating pressure between a lower value lying closely below said inflection point and an upper value lying in said second zone,
- said dilation element having a structure capable of responding to pressure pulses in said pulsating pressure at a frequency of 0.5 to 3 Hz.

4,439,187
HYPODERMIC SYRINGE

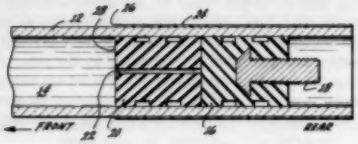
Ida M. Butterfield, Santa Maria, Calif., assignor to Butterfield Group, Santa Maria, Calif.

Filed Mar. 31, 1982, Ser. No. 364,006
Int. Cl.³ A61M 5/00
U.S. Cl. 604—111 11 Claims

1. An improvement for use in a hypodermic syringe cartridge of the type having a front end to which a hypodermic needle is normally attached and having a rear end opposite the front end, and in which a non-retractable stopper having a longitudinal passage, a front end and a rear end is located within a tubular member in front of a drive piston having a front end and a rear end, the cartridge normally supplied with the rear end of the non-retractable stopper substantially in

contact with the front end of the drive piston near the rear end of the cartridge, the improvement comprising:

substantially opaque means being a permanent part of the tubular member of the hypodermic syringe cartridge as supplied for use and so located axially as to obstruct from



view the non-retractable stopper when the non-retractable stopper is in its original position and having a front end that terminates at the front end of the non-retractable stopper when the non-retractable stopper is in its original position so that any forward movement of said non-retractable stopper will expose to view a portion of the non-retractable stopper.

4,439,188

TUBE CONNECTOR

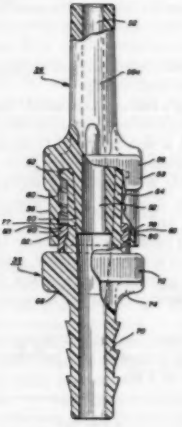
T. Michael Dennehey, Arlington Heights; Richard J. Greff, Ingleside, and Ludwig Wolf, Jr., Crystal Lake, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 187,008, Sep. 15, 1980, Pat. No. 4,346,703, which is a continuation-in-part of Ser. No. 27,419, Apr. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 5,748, Jan. 23, 1979, abandoned. This application May 13, 1982, Ser. No. 378,029

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ A61M 5/00

U.S. Cl. 604—283 **12 Claims**



8. A luer lock connector system which comprises a female luer lock connector in locked relation with a male luer lock connector, said female luer lock connector comprising a main tubular member sealingly receiving said male luer lock connector within the bore of said main tubular member, said main tubular member being provided with flange shaped protrusion means extending radially outwardly, the outer wall of said female tubular member being provided with an annular area spaced from the ends thereof and also spaced from the protrusion means, said annular area defining an enlarged diameter for annular engagement with the male connector to form a sealing area, said female luer lock connector being free of an integrally attached sleeve surrounding said annular area and main tubular member; said male luer lock connector having a central tubular luer portion defining an axial bore projecting in sealing relation into the bore of the main tubular member, said male luer lock connector also defining an outer sheath which surrounds both said central tubular luer portion and the main tubular member and is positioned beyond said central tubular luer portion to circumferentially enclose the entire length of said central tubular luer portion within said outer sheath, said outer sheath having a generally circular cross-sectional configuration and defining a free annular end, a portion of said outer sheath defining a threaded internal wall portion in locking engagement with the flange-shaped protrusion means of the female luer lock connector, said threaded internal wall portion being spaced from the free annular end of said sheath by a portion of the inner surface of said sheath which defines an annular sealing area free of threads, said annular sealing area surrounding said flange-shaped protrusion means in annular sealing relation thereto, said outer sheath being made of a resiliently deformable material and said female luer lock connector being made of rigid material.

4,439,189

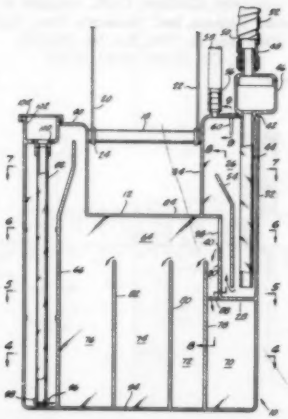
PLEURAL DRAINAGE SYSTEM

John E. Sargeant, Los Alamitos, and Jack L. Hoffa, Brea, both of Calif., assignors to Bentley Laboratories, Inc., Irvine, Calif.

Filed Jun. 18, 1981, Ser. No. 274,788

Int. Cl.³ A61M 1/00

U.S. Cl. 604—317 **2 Claims**



1. A pleural drainage system, comprising

a container having a first cavity, a second cavity, and a wall therebetween, said wall having a port, the lower edge of said port defining a first level, said port allowing unrestricted fluid communication above said first level between said first and second cavities;

an inlet tube extending downwardly into said first cavity to an opening at a second level below said first level;

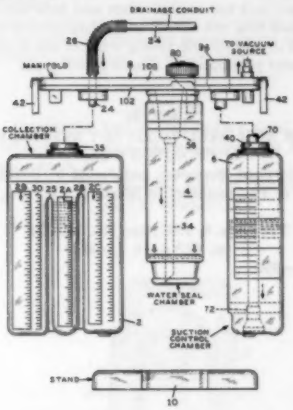
a third cavity in said inlet tube, said third cavity having a volume greater than the volume of said first cavity below said first level; and

a vacuum source above said first level.

4,439,190
UNDERWATER DRAINAGE DEVICE

Donald E. Protzmann, Litchfield; Ronald P. Roveda, Monroe, both of Conn., and John Uhoch, Warwich, R.I., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Apr. 27, 1981, Ser. No. 257,953
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—319 **28 Claims**



15. In an underwater drainage device having a collection chamber adapted to be connected in fluid communication with the pleural cavity of a patient, a liquid seal chamber in fluid communication with said collection chamber and a suction chamber in fluid communication with said seal chamber; retarding means comprising:

(a) a water seal tube extending into said liquid seal chamber in fluid communication with said collection chamber;

(b) an open ended cylinder connected to said water seal tube;

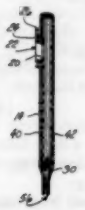
(c) a liquid retarding frame means having a plurality of vertical struts interconnected by a plurality of circular support means adapted to position within said open ended cylinder;

(d) a membranous material connected to said frame so as to retard the flow of liquid from the water seal chamber towards said collection chamber.

4,439,191
OSTOMY BAG COVER

Elizabeth R. Hogan, 309 Dartmore P.O. Box 194, Whitmore Lake, Mich. 48189

Filed Jul. 14, 1982, Ser. No. 397,994
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—332 **6 Claims**



1. A combination cover and ostomy bag of the type having an inlet, means for connecting the inlet in communication with a stoma on a body and a closeable outlet located at the bottom of the ostomy bag for emptying the contents therefrom, the combination comprising:

a ostomy bag;

a hollow body;

a first aperture formed in the hollow body and adapted to be disposed in registry with the inlet of the ostomy bag and to receive the connecting means therethrough;

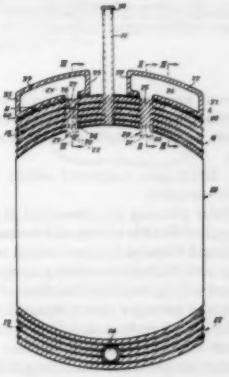
a second aperture means formed in the lower portion of the hollow body, the second aperture means disposed in proximity with the outlet of the ostomy bag so as to foldably receive the outlet of the ostomy bag therethrough; and

means for releasable closing the second aperture in the hollow body to enable the oulet of the ostomy bag to be stored within the hollow body and passed through the second aperture to empty the contents of the ostomy bag therefrom.

4,439,192
CONTAINER FOR LIQUIDS FOR USE IN MEDICINE AND SURGERY

Hendrik J. Leurink, Lisse, Netherlands, assignor to Stichting Centraal Laboratorium Van De Bloedtransfusiedienst Van Het Nederlandse Rode Kruis, Amsterdam, Netherlands

Continuation of Ser. No. 95,975, Nov. 20, 1979, abandoned, which is a continuation of Ser. No. 869,102, Jan. 13, 1978, abandoned, which is a continuation of Ser. No. 690,731, May 27, 1976, abandoned. This application Oct. 16, 1980, Ser. No. 197,476
Claims priority, application United Kingdom, May 30, 1975, 23632/75
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—408 **1 Claim**



1. A container for liquids, comprising two layers of flexible plastic film, said film layers being joined together to define an enclosure for liquid, said joining being accomplished by a peel resistant fusion weld, at least one duct of plastic material sealed between said film in an end weld region, said duct communicating at its inner end with the interior of said enclosure and at its outer end with the interior of an expansion chamber formed by an area within said end weld region in which said film is left unwelded, said duct having internal obstruction means including a rupturable sealing membrane extending across it spaced inwardly from said outer end of said duct thereby isolating from said liquid enclosure the portion of the duct interior which extends outwardly from said membrane, said expansion chamber being dimensioned to accommodate during sterilization, without pressure induced film separation of said welds, expansion of gas contained in the combined space of said expansion chamber and said portion of the duct outwardly of said membrane, means for defining a tear line in said film so that said expansion chamber can be removed to expose said outer

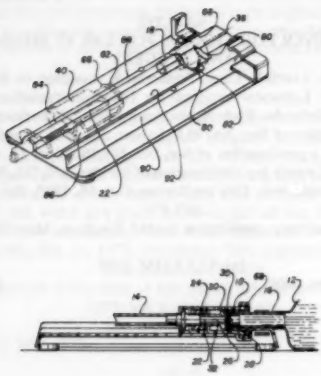
end of said duct by tearing away said film outwardly of said tear line, said tear line being interrupted by the duct and the duct being locally thinned in this region to facilitate rupture thereof when the expansion chamber is torn away, said obstruction means in said duct being spaced inwardly from said tear line and from the outer end of the seal between said duct and said film.

4,439,193

APPARATUS FOR CONNECTING MEDICAL LIQUID CONTAINERS

Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 19, 1982, Ser. No. 350,468
Int. Cl.³ A61M 5/00
U.S. Cl. 604—411 **23 Claims**



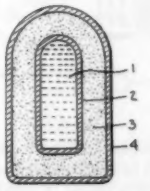
1. An improved apparatus for aseptically connecting medical liquid containers to a length of flexible tubing comprising:
- a tubular port member extending from the medical liquid container;
- a pierceable diaphragm positioned within and sealing said tubular port member;
- a hollow tubular piercing pin connected at its proximal end to said length of flexible tubing and having a sharpened tip at its distal end adapted for penetration of said pierceable diaphragm and further describing a plurality of flange members extending laterally therefrom;
- an alignment tray having a cavity integrally formed therein adapted for the reception and fixed positioning of said tubular port member therein;
- a clasp member constructed and arranged for the selective enclosure of said piercing pin and retention of said piercing pin within said tubular port member, said clasp member including first and second substantially C-shaped portions hingedly connected to each other and further including latching means at opposing ends thereof;
- a tubular shroud distally extending from said clasp member constructed and arranged for telescopic connection to said tubular port member;
- threading means integrally formed and helically arrayed about said tubular shroud;
- lock nut means concentrically disposed about said tubular port member, constructed and arranged for threadable engagement with said threading means on said tubular shroud;
- a linear trough integrally formed along the base of said alignment tray, said trough being constructed and arranged so as to substantially conform to the width and depth of said clasp member; and
- a lock nut cavity integrally formed in said alignment tray, constructed and arranged for clearance from said lock nut when said tubular port member is positioned within said alignment tray;
- whereby said clasp member with said hollow tubular piercing pin contained therein may be snugly received in and linearly advanced along said linear trough in substantial axial alignment with said tubular port member so that said piercing pin penetrates said pierceable diaphragm and said threading means on said tubular shroud threadably engages said lock nut so that when said lock nut is rotated within said lock nut cavity, said container will be fixedly attached to said flexible tubing without touch contamination of said port member or said piercing pin.

4,439,194

WATER AND DRUG DELIVERY SYSTEM FOR SUPPOSITORY USE

Richard J. Harwood, Bensalem, and Joseph V. Bondi, Collegeville, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 8, 1981, Ser. No. 300,370
Int. Cl.³ A61L 15/06
U.S. Cl. 604—890 **5 Claims**



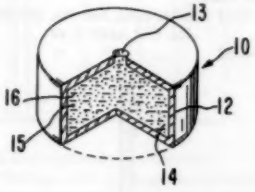
1. A drug delivery system comprising an aqueous core in a waxy housing, which housing melts at body temperature, surrounded by a matrix, shaped and sized for rectal or vaginal suppository use, comprising drug which is solubilized by the aqueous solution contained in the waxy core and water soluble or dispersible excipients.

4,439,195

THEOPHYLLINE THERAPY

David Swanson, Palo Alto, and David Edgren, El Granada, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 196,219, Oct. 14, 1980, Pat. No. 4,326,525. This application Feb. 1, 1982, Ser. No. 344,785
Int. Cl.³ A61L 15/06
U.S. Cl. 604—890 **4 Claims**



1. An oral, osmotic device for the controlled delivery of a beneficial drug, comprising:
- (a) a shaped wall formed of a member selected from the group comprising cellulose acrylate, cellulose diacylate, cellulose triacylate, and mixtures thereof, which wall is permeable to the passage of an external fluid and substantially impermeable to the passage of drug, the wall surrounding and forming:
- (b) a compartment containing the beneficial drug theophyl-

line, and a buffer that is soluble in fluid imbibed into the compartment and provides an environment in the compartment that aids in the delivery of theophylline from the device, the buffer a member selected from the group consisting of sodium glycinate, sodium citrate, sodium tartrate, sodium succinate, sodium potassium tartrate, and sodium maleate, which buffer interacts with the drug theophylline and produces the salt of the drug theophylline; and,

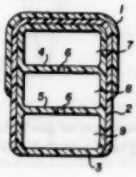
(c) a passageway in the wall for delivering the salt of the drug theophylline from the compartment at a controlled rate over a prolonged period of time.

4,439,196

OSMOTIC DRUG DELIVERY SYSTEM

Takeru Higuchi, Lawrence, Kans., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 18, 1982, Ser. No. 359,447
Int. Cl.³ A61K 9/22
U.S. Cl. 604—890 **14 Claims**



1. An osmotic delivery system shaped and sized for oral ingestion, implantation, rectal, vaginal or ocular insertion, for delivery of a drug or other beneficial substance comprising a compartment consisting of 2 or more chambers in series, the chambers being adapted to house osmotically active agents, adsorption adjuvants, drugs, and pro-drugs, the chambers being formed by an external shell and 1 or more chamber-dividing walls, each chamber-dividing wall having a micro-orifice connecting adjacent chambers, the external shell and chamber-dividing walls being of a rigid microporous material; one or more succesive overlayers of a semipermeable membrane, the first overlayer completely covering the external shell of all but one chamber and substantially covering the external shell of the one chamber leaving exposed a microporous drug-emitting surface; and each successive overlayer completely covering all but one more chamber and substantially covering the one more chamber; and optionally including a quick release loading dose of drug external to and covering the microporous drug-emitting surface.

4,439,197

MEDICAL CAPSULE DEVICE

Mikio Honda; Koichi Matsui; Kitijiro Kohri; Kazuo Misawa, and Koji Kambara, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,112
Claims priority, application Japan, Mar. 23, 1981, 56-41878
Int. Cl.³ A61M 7/00
U.S. Cl. 604—891 **5 Claims**

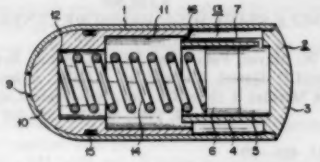
1. A medical capsule device comprising:

a capsule body provided with a chamber inside and a communicating path for communicating the chamber with the outside;

a movable member arranged in the chamber and movable between a liquid-pushing position at which the volume of said chamber is made smallest and a liquid-receiving position at which the volume of said chamber is made largest;

a coiled operating member made of a shape memory alloy whose crystalline structure shows martensite or mother phase according to changes of its temperature for selectively moving the movable member to the liquid-receiving or liquid-pushing position according to temperature changes of said operating member itself; and

a temperature adjustment mechanism arranged in the capsule body including a power supply source electrically connected to the operating member, and a switching



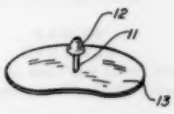
circuit connected between the power supply source and the operating member and capable of being remotely operated to start or stop the flow of current from the power supply source to the operating member, said temperature adjustment mechanism adjusting the temperature of said operating member to selectively move the movable member to the liquid-pushing or liquid-receiving position.

4,439,198

BIODEGRADABLE OCULAR INSERT FOR CONTROLLED DELIVERY OF OPHTHALMIC MEDICATION

Alan H. Brightman, II, and Michael C. Theodorakis, both of Champaign, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Jul. 9, 1981, Ser. No. 281,911
Int. Cl.³ A61M 7/00
U.S. Cl. 604—894 **4 Claims**



1. An ocular insert adapted for attachment to the third eyelid of a mammalian animal comprising a substantially disc-shaped reservoir impregnated with an ophthalmic drug in amount and form to provide continuous, controlled administration of a pre-determined, therapeutically effective dosage of drug to the eye over a prolonged period of time; and a fixed spear of biodegradable material protruding from the reservoir for piercing the third eyelid and attaching the insert thereto, said biodegradable material being selected from the group consisting of polylactic acid, polylactic glyconic acid, polysaccharide derivatives, polyaminoacids, cellulose, and ethyl cellulose.

4,439,199

METHOD FOR ADMINISTERING IMMUNOPOTENTIATOR

Alfred A. Amkraut, and Agusto B. Martins, both of Palo Alto, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 122,124, Feb. 19, 1980. This application Mar. 25, 1982, Ser. No. 361,895
Int. Cl.³ A61L 15/06
U.S. Cl. 604—894 **21 Claims**

1. A method for potentiating the immune response of a host, which method consists essentially of administering to a host needing potentiation of the immune response an immunopotentiating agent, said agent administered from a therapeutic delivery system that limits the contact of the host with the agent until the agent is released oil-free from the system, thereby

lessening the incidence of local inflammation, fever and adverse biological response of the host to the agent, which agent is administered in a therapeutically effective amount of at least one picogram for a prolonged period of time of at least 12 hours for potentiating the immune response.

4,439,200

SINGLE STAGE HIGH PRESSURE CENTRIFUGAL SLURRY PUMP

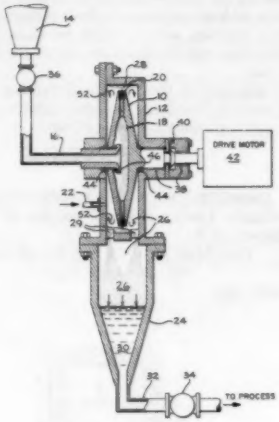
John W. Meyer, Palo Alto; John H. Bonin, Sunnyvale, and Arnold D. Daniel, Alameda, all of Calif., assignors to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Dec. 14, 1981, Ser. No. 330,469

Int. Cl.³ B65G *53/30*

U.S. Cl. 406—99 **2 Claims**

1. A single stage high pressure centrifugal slurry pump for feeding a slurry to a high pressure environment comprising: a housing, an impeller rotatability mounted within said housing; said housing providing substantial clearance for the impeller; means for feeding a slurry consisting of finely divided solids suspended in a liquid to the center of said impeller; said impeller further including passages communicating from the center of said impeller to the periphery of said impeller whereby the rotation of said impeller drives the slurry from the center of said impeller through the passages to the interior of said housing; means for feeding compressed gas to the interior of said housing whereby the rotation of said impeller causes the slurry to be driven away from the impeller and the compressed gas to form a gas bubble immediately surrounding said impeller, said impeller passages further defined as terminating in convergent nozzles, said nozzles accelerating the slurry flow sufficiently to produce a velocity great enough to make the slurry flow stable



against upstream incursion of gas bubbles from the area immediately surrounding said impeller into said passages.

4,439,201
PROCESS FOR RETANNING LEATHER WITH ACRYLIC-BASED OLIGOMERS

Alain Lauton, Saint-Louis, France, and Albert Würmli, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

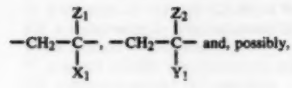
Filed Mar. 1, 1982, Ser. No. 353,114

Claims priority, application Switzerland, Mar. 6, 1981, 1528/81; Dec. 22, 1981, 8201/81

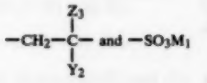
Int. Cl.³ C14C *3/22, 3/28*

U.S. Cl. 8—436 **7 Claims**

1. A process for retanning chrome-tanned leather, which process comprises treating the leather with an aqueous solution containing, as tanning agent, an oligomer which has an average molecular weight no greater than 14,000 and which contains structural units of the formulae



and, possibly,



wherein X_1 is —CN, Y_1 is —COOH or —$COOM_2$, Y_2 is —$CONH_2$, —CH_2OH, —OCH_3 or —OC_2H_5, each of Z_1, Z_2 and Z_3 is hydrogen, methyl or ethyl, and each of M_1 and M_2 is an amine cation, an ammonium cation or an alkali metal cation.

4,439,202
EMBROIDERED TRANSFER AND METHOD OF MAKING SAME

Howard Sernaker, Wynnewood, Pa., assignor to Virginville Patents, Inc., Virginville, Pa.

Filed Jun. 15, 1978, Ser. No. 916,018

Int. Cl.³ D06P *1/16, 1/18, 3/36*

U.S. Cl. 8—471 **20 Claims**

1. A method of making an embroidered transfer or emblem comprising the steps of:

(a) embroidering a pattern on a portion of a substrate while using thread free from oil and with said thread being of a single color and in an amount so that a portion of the pattern is sculptured by having a greater thickness than another portion of the pattern,

(b) separating the pattern and its associated substrate portion from the remainder of the substrate,

(c) providing a transfer print on paper with a dyestuff of at least two different colors and capable of subliming under heat and pressure or vacuum,

(d) registering portions of the print with mating portions of said pattern,

(e) transferring color from said print as a gas to the warp side of the pattern while applying sufficient heat to sublime said dyestuff.

4,439,203
PROCESS FOR IMPROVING THE WETFASTNESS OF DYEINGS, PRINTINGS AND OPTICAL BRIGHTENINGS ON CELLULOSIC SUBSTRATES AND COMPOSITIONS USEFUL THEREFOR

James R. Runyon, Oberwil, and Salvatore Valenti, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed May 10, 1982, Ser. No. 376,901

Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119115; May 18, 1981, 3119672; Jun. 15, 1981, 3123664

Int. Cl.³ C08G *12/10;* D06P *5/22;* D06M *15/54*

U.S. Cl. 8—496 **24 Claims**

1. A process for improving the fastness properties of a dyestuff or optical brightener on a substrate comprising hydroxy group-containing fibers, which process comprises applying to a dyed, printed or brightened substrate a composition comprising

IV. a water soluble precondensate produced by reacting (A) with (B),

V. a water-soluble precondensate produced by reacting (A) and (B) together with (E),

VI. a water-soluble precondensate produced by reacting (A) with (C) in an aqueous medium at 20°–60° C.,

VII. a water-soluble precondensate produced by reacting (A) and (C) together with (E),

VIII. a water-soluble precondensate produced by reacting (A) with (D), or

IX. a water-soluble precondensate produced by reacting (A) and (D) together with (E),

each of V, VI, VII, VIII and IX being in combination with a catalyst (F) and IV optionally being in combination with a catalyst (F) wherein

(A) is the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyandiamide, guanidine or biguanidine; with the proviso that up to 50 mole % of the cyanamide, dicyandiamide, guanidine or biguanide may be replaced with a dicarboxylic acid or a mono- or di-ester thereof, said product (A) containing reactive hydrogen atoms bound to nitrogen,

(B) is an epihalohydrin or a precursor thereof,

(C) is formaldehyde or a formaldehyde precursor,

(D) is a dihydroxyalkyleneurea or a methyl ether thereof, followed by formaldehyde or a formaldehyde precursor

(E) is a member selected from the group consisting of N,N'-dimethylol-4,5-dihydroxy-ethyleneurea, N,N'-dimethylol-4,5-dimethoxy-ethyleneurea, N,N'-dimethylol-4-methoxy-5,5-dimethyl-propyleneurea, N,N'-dimethylol-carbamates and the ethers of said compounds, and

(F) is a catalyst for the cross-linking of N-methylol compounds of the type (E) above,

and subsequently carrying out a cross-linking step.

4,439,204
DYE SALTS

Willy Stingelin, Reinach, and Peter Loew, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

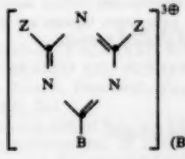
Filed Aug. 30, 1982, Ser. No. 412,741

Claims priority, application Switzerland, Sep. 11, 1981, 5899/81

Int. Cl.³ C08K *5/34;* C09B *23/16*

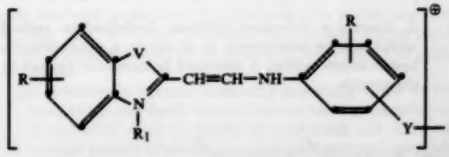
U.S. Cl. 8—497 **10 Claims**

1. A dye salt of the formula I



(I)

wherein Z is a radical of the formula



in which R is hydrogen, unsubstituted or substituted C_1–C_4al-

kyl, unsubstituted or substituted C_1–C_4alkoxy, the —NO_2 group, unsubstituted or substituted acylamino, or is halogen or the —CN group, R_1 is unsubstituted or substituted C_1–C_4alkyl or is C_3–C_4alkenyl, V is a sulfur atom or the group

wherein both radicals R_1 may be linked together to form a carbocyclic 5- or 6-membered ring, and Y is —NH—, —NR_1, —O— or —S—; B has the same meaning as Z or is a cationic radical which differs from Z, X is an anion other than $BF_4\ominus$, m is 1 to 3 and n is 0 to 2.

4,439,205

AQUEOUS LIQUID DYE COMPOSITION: STORAGE STABLE REACTIVE DYE WITH REDUCTION INHIBITOR

Naoki Harada, Ibaraki, and Sadaharu Abeta, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 20, 1981, Ser. No. 323,365

Claims priority, application Japan, Dec. 22, 1980, 55-182408

Int. Cl.³ C09B 67/26

U.S. Cl. 8—527 **12 Claims**

1. An aqueous liquid dye composition consisting essentially of 5 to 35% by weight of a reactive dye, 0.05 to 30% by weight of at least one reduction inhibitor selected from sodium or potassium nitrite, sodium or potassium chlorate, sodium or potassium perchlorate and sodium or potassium percarbonate, and water.

4,439,206

DYEING PROCESS WITH REACTIVE DYES AND GLYCIDYL COMPOUND

Dietrich Hildebrand, and Udo W. Hendricks, both of Odenthal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 3, 1982, Ser. No. 439,099

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147153

Int. Cl.³ D06P 1/64

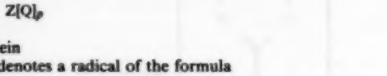
U.S. Cl. 8—543 **7 Claims**

1. Process for dyeing fibres by the exhaustion principle, characterized in that a reactive dyeing liquor is used which, in addition to the reactive dyestuff or the reactive dyestuff mixture, contains one or more salts, at least one compound having a glycidyl radical, and, if appropriate further auxiliaries, further characterized in that exhaustion liquors are used which contain a compound of the general formula

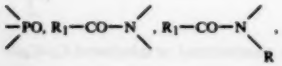
$$Z[Q]_p$$

wherein

Q denotes a radical of the formula



Z denotes a 1-4-valent aliphatic hydrocarbon radical which can be interrupted by S atoms, a cycloaliphatic hydrocarbon radical, a saturated heterocyclic radical or the groups



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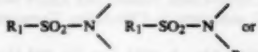
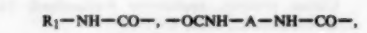
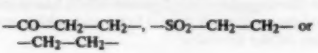




R denotes hydrogen or alkyl,

R_1 denotes alkyl, cycloalkyl, aryl or aralkyl,

Y denotes a radical of the formula



A denotes alkylene or arylene,

m denotes 0 or 1,

n denotes 0–10,

q denotes 0 or 1 and

p denotes 1–4.

4,439,207

STABLE DISPERSE DYE COMPOSITIONS COMPRISING AT LEAST TWO MONOAZO DYES

Ruedi Altermatt, Buckten, and Hans Jakob, Oberwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 5, 1982, Ser. No. 405,500

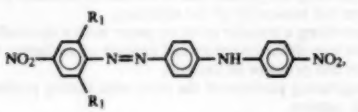
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131270

Int. Cl.³ C09B 67/38; D06P 1/18

U.S. Cl. 8—639 **20 Claims**

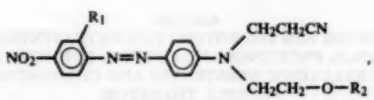
1. A disperse dye composition comprising

(a) 20–55% by weight of a dye of the formula



wherein each R_1 is independently halo,

(b) 5–40% by weight of at least one dye of the formula



wherein R_1 is halo, and R_2 is hydrogen, (C_1–$_4$alkyl)carbonyl or benzoyl, and

(c) 30–60% by weight of (i) a dispersing agent, (ii) a mixture of dispersing agents, (iii) a mixture of at least one dispersing agent and at least one other additive or dye or (iv) a mixture of at least one dispersing agent, at least one other additive and at least one other dye,

with the proviso that Components (a), (b) and (c) together constitute 100% of the dry weight of the composition.

4,439,208

METHOD FOR IMPROVING THE FASTNESS OF DYEINGS WITH BASIC DYES ON CELLULOSIC SUBSTRATES

Helmut Moser, Oberwil, and Tibor Robinson, Birsfelden, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jun. 22, 1982, Ser. No. 391,014

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1981, 3124400; Jun. 22, 1981, 3124472; Jun. 22, 1981, 3124477

Int. Cl.³ D06P 3/58; D06M 15/54

U.S. Cl. 8—556 27 Claims

1. A method for improving the fastness of a dyeing or printing made with a basic dyestuff on a cellulosic fibrous substrate which comprises applying to the substrate, either in admixture with or subsequently to the basic dyestuff, a fixing agent comprising:

I. a water-soluble precondensate of (A) with (C),

II. a mixture of (A) and (C),

III. a water-soluble precondensate of (A) with (D),

IV. a mixture of (A) and (D),

V. a water-soluble precondensate of (A) with (C) and (D),

VI. a mixture of (A), (C) and (D),

VII. a water-soluble precondensate of (B) with (C),

VIII. a mixture of (B) and (C),

IX. a water-soluble precondensate of (B) with (D),

X. a mixture of (B) and (D),

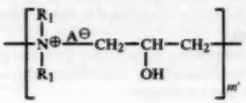
XI. a water-soluble precondensate of (B) with (C) and (D) or,

XII. a mixture of (B), (C) and (D),

wherein

(A) is the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyandiamide, guanidine or biguanidine, with the proviso that up to 50 mole % of the cyanamide, dicyandiamide, guanidine or biguanidine may be replaced with a dicarboxylic acid or a mono- or di-ester thereof, said product (A) containing reactive hydrogen atoms bound to nitrogen,

(B) is a quaternary polyalkylene polyamine having recurring units of the formula II'



II'

where

R_1 is C_{1-4}alkyl

m' is 20–30 and,

$A^{\ominus}$ is an anion.

(C) is formaldehyde or a formaldehyde precursor and,

(D) is an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide.

4,439,209

THERMAL DECOMPOSITION APPARATUS

Carl M. Wilwerding, 2444 SE. Booth St., Roseburg, Oreg. 97470, and Robert S. Williams, Rte. 1, Box 719, Sutherlin, Oreg. 97479

Filed Aug. 25, 1982, Ser. No. 411,179

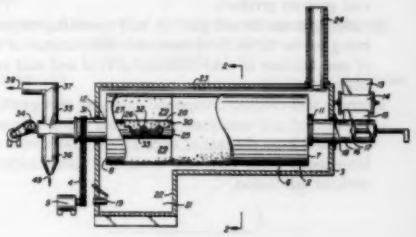
Int. Cl.³ C10J 3/00

U.S. Cl. 48—76 7 Claims

1. An apparatus for the continuous non-oxidative thermal decomposition of heat-dissociable organic matter to a solid carbon residue and gaseous products, said apparatus comprising:

a cylindrical drum rotatably mounted inside a furnace in a substantially horizontal position for rotation about its axis, said drum comprising a cylindrical wall and two end faces designated, respectively, an upstream end and a downstream end, said upstream end containing an inlet port at approximately the center thereof for receiving said heat-dissociable organic matter, and said downstream end containing an outlet port at approximately the center thereof for discharging both said solid carbon residue and said gaseous products such that the entire reaction mixture flows from said upstream end to said downstream end, the interior space of said drum comprising two zones in axial relation, the zone at said upstream end being designated a reaction zone and the zone at said downstream end being designated a removal zone,

means positioned externally of said drum and at said downstream end of said drum for providing heat within said furnace in the form of heated gases directed at the outer surface of said drum wall toward said downstream end to effect the flow of heated gases in a direction generally counter-current to the flow of said process mixture, thereby producing a temperature gradient within said drum increasing in the direction of flow of said process mixture,



feed means for the feed of said heat-dissociable organic matter through said inlet port in the substantial absence of air,

a screw conveyor within said removal zone extending through said outlet port, said screw conveyor comprising a non-rotatable trough with an opening at the top thereof to receive both solids and vapors, and a spiral flight mounted on a shaft rotatably mounted within said trough, the outer edge of said flight being sufficiently close to the bottom of said trough to convey substantially all solid matter in said trough out through said outlet port, the cross-section of said flight leaving sufficient open space in said outlet port to permit the passage of said gaseous products therethrough, and

centripetal conveying means within said removal zone for conveying substantially all of said solid residue within said removal zone into said trough opening.

4,439,210

METHOD OF CATALYTIC GASIFICATION WITH INCREASED ASH FUSION TEMPERATURE

Michael S. Lancet, Pittsburgh, Pa., assignor to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 305,654, Sep. 25, 1981. This application Oct. 15, 1981, Ser. No. 311,681

Int. Cl.³ C10J 3/14, 3/16

U.S. Cl. 48—202 9 Claims

1. A process for producing a gaseous product comprising hydrogen and carbon monoxide by high ash fusion temperature catalyzed gasification of bituminous coal at temperatures at least 100° F. above the initial deformation temperature without substantial ash fusion comprising the sequence of steps as follows:

(a) providing a mixture consisting essentially of 50 to 80 weight percent finely divided bituminous coal particles of a size of 65 mesh or smaller than 65 mesh and 20 to 50 weight percent finely divided calcium compound particles of a size smaller than 65 mesh, said calcium compound being selected from the group consisting of calcium oxide,

calcium carbonate and calcium hydroxide, said bituminous coal having the property of becoming liquid with sufficient heating,

(b) briquetting said mixture to form a briquetted mixture,

(c) feeding said briquetted mixture into the top of a fixed bed gasifier,

(d) catalytically gasifying said briquetted mixture with steam in said gasifier to form a gaseous product comprising hydrogen and carbon monoxide, said hydrogen and said carbon monoxide each comprising a substantial portion of said gaseous product,

said gasifying comprising

(i) heating said briquetted mixture of finely divided coal and finely divided calcium compound in said fixed bed gasifier to an operating temperature at least 100° F. above the intial deformation temperature of the ash of said bituminous coal and, said heating forming a catalyzed coke, said catalyzed coke reacting with said added steam to form said gaseous product,

(ii) adding steam to said gasifier, said operating temperature being below the initial deformation temperature of the ash of said mixture of said bituminous coal and said calcium compound,

whereby said calcium compound catalyzes said gasification, the rate of said catalyzed gasification being substantially increased from the rate of uncatalyzed gasification of said bituminous coal, and said catalyzed gasification being without ash fusion.

4,439,211

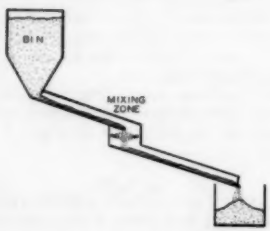
SUPPRESSION OF FOOD DUSTS AND THE LIKE

Donald E. Anderson, Maumee; Glenn E. Hall, Toledo, and Kevin M. Foley, Maumee, all of Ohio, assignors to The Andersons, Maumee, Ohio

Continuation-in-part of Ser. No. 302,729, Sep. 16, 1981, abandoned. This application Jan. 29, 1982, Ser. No. 343,729

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—1 **24 Claims**



1. A method of reducing the liberation of dust particles from a dry particulate material that is transported in a material stream to a location where it falls through the air, said method comprising: introducing a small amount of water onto contain ones of said particles in said material stream prior to reaching such location, said water being in an amount of at least 0.01% and no more than 1% of the weight of the dry particulate material, causing such wetted particles to constant and be distributed generally uniformly throughout the remainder of the material prior to reaching such location, delaying the delivering of the wetted particles by a period of at least one second prior to reaching such location, and providing a smooth path for the material stream after such uniform distribution and prior to discharge at such location, whereby agitation of the material stream is minimized after such uniform distribution and prior to discharge.

4,439,212

PROCESS AND DEVICE FOR GASEOUS ATMOSPHERE SEPARATION IN PLANTS FOR HEAT TREATMENT UNDER ATOMOSPHERE

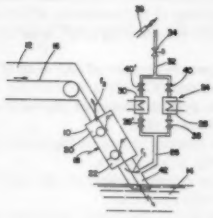
Robert Wang, Wissous, France, assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation of Ser. No. 242,752, Mar. 11, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 486,113

Claims priority, application France, Mar. 14, 1980, 80 05763

Int. Cl.³ B01D *5/00*

U.S. Cl. 55—27 **16 Claims**



1. A process comprising:

(a) continuously conveying a metal strip through a furnace;

(b) downstream from the furnace, continuously conveying the metal strip through a bath of heated coating metal, coating metal vapor tending to travel upstream adjacent the metal strip from the bath toward the furnace;

(c) between the furnace and bath, injecting a gas flow around the conveyed metal strip, directing a first portion of the gas flow downstream toward the bath, and directing a second portion of the gas upstream toward the furnace;

(d) upstream from the bath, sweeping the coating metal vapor from adjacent the metal strip with the gas flow first portion to an exhaust;

(e) directing the gas flow in the exhaust through at least one of at least two exchangers connected in parallel, each exchanger selectively connected to the exhaust by a shut-off valve; and,

(f) recovering the coating metal vapor from the gas flow first portion in the exhaust, by condensing the metal vapor from at least one exchanger.

4,439,213

NITROGEN GENERATION SYSTEM

Bill Frey, Ellicott City; Mark Haynie, Glen Burnie, and John Psaras, Arnold, all of Md., assignors to The C. M. Kemp Manufacturing Co., Glen Burnie, Md.

Filed Dec. 30, 1981, Ser. No. 334,463

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—31 **4 Claims**

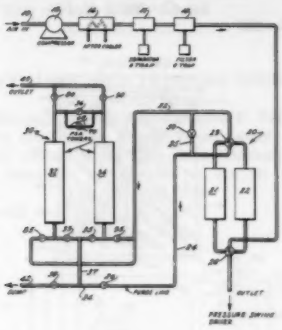
1. In a process for generating high purity nitrogen from compressed air by a pressure swing multi-tower adsorption system operated through successive adsorption and desorption cycles the improvements which comprise purging the tower undergoing desorption with from 5–30% of the high purity nitrogen offtake from the tower producing nitrogen through adsorption and drying the compressed air in a pressure swing solid desiccant twin tower air dryer, employing oxygen enriched gas effluent from desorption of the multi-tower adsorption system at ambient pressures for desiccant regeneration purposes in the twin tower air dryer.

3. In an apparatus for producing high purity nitrogen including a pressure swing multi-tower adsorption system with a length to diameter ratio of the towers in said adsorption system from 3.5:1 to 10:1, operated through successive adsorption and desorption cycles and a source of compressed air therefor, the improvements which comprise:

a cross-connection bleed line between the towers of said

adsorption system adapted to pass from 5–30% of the high purity nitrogen leaving the tower producing nitrogen through adsorption into the top of the tower undergoing desorption; and

a twin tower pressure swing solid desiccant air dryer be-



tween the compressed air source and said multi-tower adsorption system connected so as to feed dried compressed air to said multi-tower adsorption system for recovery of high purity nitrogen therefrom, and to receive ambient pressure oxygen enriched gas effluent therefrom for regenerating the desiccant in the air dryer.

4,439,214

ADSORPTION DEVICE FOR THE DRY PURIFICATION OF GASES

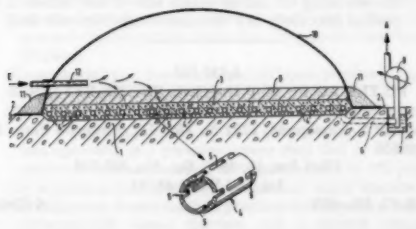
Gunther Wiebke, deceased, late of Munich, Fed. Rep. of Germany (by Peter Wieloch, executor); Gunter Maurer, Munich, Fed. Rep. of Germany; Piet J. L. Laurijsen, LN Bedum, Netherlands, and Roman Kurth, Wildpoldsried, Fed. Rep. of Germany, assignors to Elektroschmelzwerk Kempten GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,675

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129077

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—74 **16 Claims**



1. An adsorption device for the purification of gases which comprises a layer of particulate adsorbent material over the ground, a sheet-like flexible gas impermeable cover over the layer of adsorbent material said sheet-like flexible cover being in contact with the ground about its margin, means for introducing gases underneath the cover and means for removing the gases which have passed through the layer of adsorbent material from under the cover and pressure control means in communication with said device to control the gas pressure.

16. A method for dry purification of gases at low pressure by a fixed bed of adsorbent material which comprises: introducing the gas to be purified above the surface of a layer of particulate adsorbent material spread over the ground, the entire surface of said layer of adsorbent material being covered by a gas-impermeable flexible plastic foil whose margin is in contact with the ground, collecting the gas which has passed through the layer of adsorbent material underneath the layer of adsorbent material and passing the gas which has passed through the layer of adsorbent material outside the cover.

4,439,215

APPARATUS AND METHOD FOR EXTRACTING DUST FROM AIR

Bogdan J. Rawicki, 17, Stanwick Rd., London, W14 8TZ, England

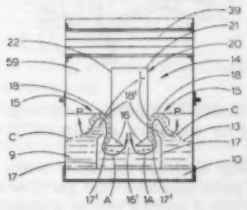
Continuation of Ser. No. 65,837, Aug. 17, 1979, Pat. No. 4,290,784, which is a continuation of Ser. No. 964,195, Nov. 28, 1978, abandoned. This application May 8, 1981, Ser. No. 261,954

Claims priority, application United Kingdom, Nov. 30, 1977, 49873/77

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ B01D *47/02*

U.S. Cl. 55—95 **20 Claims**



1. A dust extraction apparatus which comprises inlet means for receiving air carrying dust therein, a water reservoir, means for directing the air from the inlet means to said water reservoir having a main channel with side walls at least one of which is designed for shaping the water in said reservoir during use in cooperation with at least one additional plate so as to form an essentially static mass of water having an indulating shape with a curvilinear surface and for constraining the air to move through said mass of water in an extended sinuous or tortuous internal path such that the air enters the surface of said mass medially via one region and leaves the surface of said mass laterally via another region without creating significant spray or turbulence, and an outlet means for discharging the air after cleaning.

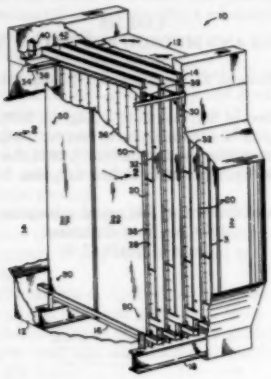
17. A method of extracting air from dust which comprises passing air carrying dust therein through water in a reservoir, said reservoir being positioned between an inlet and an outlet, said air being directed from the air inlet to the water reservoir through a main channel having side walls which cooperate with at least one additional upstanding plate which shapes the water to form an essentially undulating shaped static mass and constrains the air to move through the mass of water in an extended sinuous or tortuous path such that the air enters the surface of said mass medially via one region and leaves the surface of said mass laterally via another region without creating significant spray or turbulence, at least one of said side walls of said channel having a lower end terminating as a flange positioned adjacent said upstanding plate with an inwardly bent flange mounted to the bottom of said reservoir lateral to said respective flange of said wall, said wall further comprising an exterior flange projecting from the lateral surface thereof juxtapositioned above said upstanding plate, and thereafter introducing the air leaving said water into a stripping means for removing residual water from said air.

4,439,216

ELECTROSTATIC PRECIPITATOR HAVING APPARATUS FOR SENSING ELECTROSTATIC FIELD STRENGTHS

John W. Perryman, Chelsea, Ala., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 28, 1982, Ser. No. 402,504
Int. Cl.³ B03C *3/08*
U.S. Cl. 55—104 **4 Claims**



1. An electrostatic precipitator comprising:

a. a casing for conveying a horizontal flow of gas to be cleaned;

b. a discharge electrode suspended within the casing in a vertical plane parallel to the gas flow direction therethrough and to which a voltage is applied to generate an electrostatic field on each side thereof;

c. first and second collecting electrode plates disposed within the casing in spaced vertical planes parallel to the gas flow direction therethrough and positioned substantially equally distance from said discharge electrode on opposite sides thereof;

d. paired probe means comprising first and second probe means aligned oppositely each other on opposite sides of said discharge electrode, said first probe means mounted to said first collecting electrode plate and arranged to face said discharge electrode for sensing the strength of the electrostatic field generated by said discharge electrode and incident upon said first collecting electrode plate and second probe means mounted to said second collecting electrode plate and arranged to face said discharge electrode for sensing the strength of the electrostatic field generated by said discharge electrode and incident upon said second collecting electrode plate; and

e. means operatively positioned and arranged with respect to said paired probe means for comparing the electrostatic field strengths sensed by said first and second probe means and for providing an indication of the degree of imbalance between said sensed electrostatic field strengths.

4,439,217

PERMSELECTIVE ELEMENT FOR GAS SEPARATION

Masaaki Yamabe, Machida, and Katsuyuki Akiyama, Yotsukaidoh, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Nov. 5, 1982, Ser. No. 439,579
Claims priority, application Japan, Nov. 27, 1981, 56-189264
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 **6 Claims**

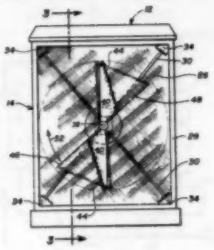
1. A permselective element for gas separation which comprises a permselective layer composed of an organic polymer having $—OCOC(CH_3)_3$ groups in its side chains.

4,439,218

SCREEN CLEANING MEANS

Edward H. Priepke, Lancaster, and Ronald L. McAllister, New Holland, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Jul. 6, 1982, Ser. No. 395,564
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—288 **3 Claims**



1. In combination with a screen of planar configuration having an air-intake side and an air-discharge side, cleaning means for said screen comprising:

(a) a frame supporting said screen;

(b) a shaft supported by said frame and extending through said screen for rotation relative to said screen;

(c) a sweep arm connected to said shaft and disposed on said air-intake side of said screen;

(d) a baffle member connected to said shaft and disposed on said air-discharge side of said screen opposite said sweep arm;

(e) means to rotate said shaft causing said sweep arm and said baffle member to rotate together so that said baffle member blocks off successive portions of said screen on said air-discharge side to thereby permit said sweep arm to sweep debris from said air-intake side of said screen; and

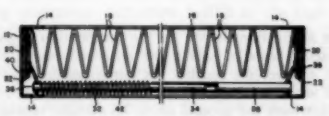
(f) a flexible member mounted on said sweep arm in wiping engagement with said air-intake side of said screen, said flexible member having an inner end and an outer end with said inner end being located closer to said shaft than said outer end, and said flexible member being arranged so that said inner end moves in advance of said outer end during rotation of said sweep arm thereby causing debris accumulating on said air-intake side of said screen to be pushed outwardly in a direction away from said shaft.

4,439,219

FILTER ASSEMBLY HAVING FILTER RETAINER APPARATUS

Leonard S. Lambrecht, 2231 N. 73rd Ct., Elmwood Park, Ill. 60635

Filed Jun. 18, 1982, Ser. No. 389,595
Int. Cl.³ B01D *46/52*
U.S. Cl. 55—499 **4 Claims**



1. A filter assembly comprising, in combination, an open sided rectangular frame with side walls spaced-apart to define a width, a disposable pleated filter element located within said frame and a filter element retainer overlying said filter element between said side walls and comprising elongated telescoping members having interfitting and outer ends, a pair of trans-

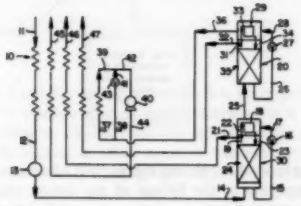
versely oriented and outwardly projecting flanges engaging said pleated filter element, one of said flanges secured to each of said outer ends of said telescoping members, and resilient means interposed between said flanges and positioned to urge said telescoping members to a length greater than the width of said frame so that said filter retainer apparatus securely holds said pleated filter element in said frame.

4,439,220

DUAL COLUMN HIGH PRESSURE NITROGEN PROCESS

Walter J. Olszewski, Tonawanda; Ravindra F. Pahade, North Tonawanda, and John H. Ziemer, Grand Island, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 2, 1982, Ser. No. 446,235
Int. Cl.³ F25J 3/04
U.S. Cl. 62—31 17 Claims



1. A process for the production of nitrogen gas at greater than atmospheric pressure by the separation of air by rectification comprising:

(A) introducing cleaned, cooled feed air at greater than atmospheric pressure into a high pressure column having a top condenser, and operating at a pressure of from about 80 to 300 psia;

(B) separating said feed air by rectification in said high pressure column into a first nitrogen-rich vapor fraction and a first oxygen-enriched liquid fraction;

(C) recovering from about 20 to 60 percent of said first nitrogen-rich vapor fraction as high pressure nitrogen gas at a pressure of from about 80 to 300 psia and a purity of at least 99 mole percent;

(D) condensing a portion of said first nitrogen-rich vapor fraction by indirect heat exchange with said first oxygen-enriched liquid fraction thereby producing a first nitrogen-rich liquid portion and a first oxygen-enriched vapor fraction;

(E) employing said first nitrogen-rich liquid portion as liquid reflux for said high pressure column;

(F) introducing said first oxygen-enriched vapor fraction into a medium pressure column having a top condenser, and operating at a pressure, lower than that of said high pressure column pressure, of from about 40 to 150 psia;

(G) separating said first oxygen-enriched vapor fraction by rectification in said medium pressure column into a second nitrogen-rich vapor fraction and a second oxygen-enriched liquid fraction;

(H) recovering from about 20 to 60 percent of said second nitrogen-rich vapor fraction as medium pressure nitrogen gas at a pressure of from about 40 to 150 psia and a purity of at least 99 mole percent;

(I) condensing a portion of said second nitrogen-rich vapor fraction by indirect heat exchange with said second oxygen-enriched liquid fraction thereby producing a second nitrogen-rich liquid portion and a second oxygen-enriched vapor fraction;

(J) employing said second nitrogen-rich liquid portion as liquid reflux for said medium pressure column; and

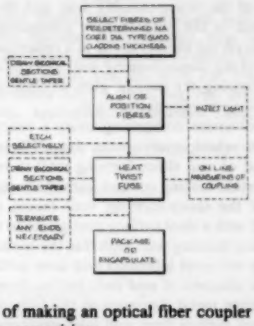
(K) removing from the process said second oxygen-enriched vapor fraction.

4,439,221

METHOD FOR MAKING OPTICAL FIBER COUPLERS

Lawrence C. Smyth, Kirkland, and Alexander W. Lightstone, Montreal, both of Canada, assignors to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence, Ottawa, Canada

Continuation of Ser. No. 169,988, Jul. 18, 1980, abandoned. This application Jan. 14, 1983, Ser. No. 458,021
Claims priority, application Canada, Nov. 1, 1979, 339409
Int. Cl.³ C03B 37/14; C03C 25/06
U.S. Cl. 65—4.21 11 Claims



1. A method of making an optical fiber coupler from a pair of optical fibers, comprising:

positioning said fibers in a predetermined orientation in a protective tube;

applying a tensile load to at least one of said fibers;

heating said fibers by applying heat to said tube which thereby functions as a furnace for distributing heat uniformly to said fiber portions therein to cause softening of the same;

twisting said fibers together when hot to fuse the same to one another and

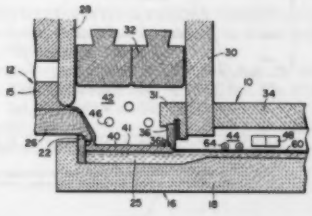
sealing said fibers within said tube to fix the fibers and produce a protective package for said coupler.

4,439,222

METHOD OF PRODUCING THIN SHEET GLASS OF HIGH QUALITY BY FLOAT PROCESS

Takayoshi Kandachi; Keizi Sueda, and Minoru Suzuki, all of Matsusaka, Japan, assignors to Central Glass Company Limited, Ube, Japan

Filed Jul. 30, 1982, Ser. No. 403,321
Claims priority, application Japan, Jul. 31, 1981, 56-120265; Sep. 11, 1981, 56-143317
Int. Cl.³ C03B 18/02
U.S. Cl. 65—99.2 10 Claims



1. In a method of producing a relatively thin sheet glass in a glass forming chamber which includes a molten metal bath constituted of a bottom structure, two opposite side walls, a molten glass inlet structure at one end and a sheet glass outlet structure at the other end and a roof structure defining an

interior space above the molten metal bath, the method being of the type having the steps of feeding molten glass onto the surface of the molten metal in the bath, allowing the molten glass to spread on the surface of the molten metal to form a molten glass layer, stretching the molten glass layer in a direction substantially parallel to the side walls so as to reduce the thickness of the molten glass layer and to advance the molten glass layer toward the outlet structure and cooling the molten glass layer, and further having the step of providing a sluice-forming wall in said interior space at a distance downstream from the inlet structure so as to extend widthways of the molten metal bath and to leave a vertically narrow gap between a lower end of the sluice-forming wall and the surface of the molten metal in the bath thereby producing a pool of the molten glass on the molten metal in a region between the inlet structure and the sluice-forming wall to form said molten glass layer by allowing the molten glass to flow out of said pool through said vertically narrow gap,

the improvement comprising using a practically isotropic graphite which is not greater than 23% in porosity as the material of said sluice-forming wall at least in its lower end portion making contact with the molten glass, a front side of the sluice-forming wall facing said pool being formed with a slant surface contiguous to the lower end of the sluice-forming wall such that the surface of the molten glass in said pool intersects said slant surface and that the vertical distance of said slant surface from the surface of the molten metal decreases as the horizontal distance of said slant surface from said inlet structure increases.

4,439,223

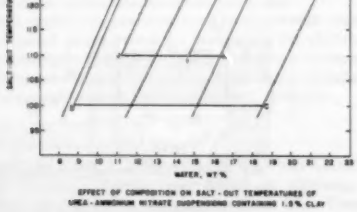
PRODUCTION OF UREA-AMMONIUM NITRATE SUSPENSION FERTILIZER

Jeffrey L. Boles, Florence, and Thomas M. Jones, Sheffield, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 448,568, Dec. 10, 1982. This application Apr. 18, 1983, Ser. No. 485,785

Int. Cl.³ C05C 9/00

U.S. Cl. 71—30 **7 Claims**



EFFECT OF COMPOSITION ON SALT-OUT TEMPERATURES OF UREA-AMMONIUM NITRATE SUSPENSIONS CONTAINING 1.5% CLAY

1. As a new composition of matter a fertilizer suspension containing urea, ammonium nitrate, water, and gelling agent, said suspension having (A) a solid phase consisting of urea and a liquid phase, said liquid phase having a density ranging from less than to substantially equal to that of said solid phase, and (B) said suspension defined within the area ABCD of FIG. 2.

4,439,224

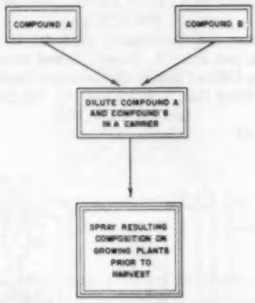
PLANT GROWTH REGULATOR AND METHOD FOR THE USE THEREOF

David T. Schulteis, Fresno, Calif., assignor to Wilbur-Ellis Company, Fresno, Calif.

Continuation of Ser. No. 173,112, Jul. 28, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,496

Int. Cl.³ A01N 43/40

U.S. Cl. 71—76 **4 Claims**


COMPOUND A
COMPOUND B
DILUTE COMPOUND A AND COMPOUND B IN A CARRIER
SPRAY RESULTING COMPOSITION ON GROWING PLANTS PRIOR TO HARVEST

1. A method of regulating the growth of cotton plants comprising applying to the foliage of the cotton plants prior to harvest a composition consisting essentially of on a weight basis: a mixture of about 20 parts of poly[oxyethylene(dimethyliminio)ethylene(dimethyliminio)ethylene dichloride] to about 1 part N,N-dimethylpiperidinium chloride diluted in an inert carrier and applied in an amount sufficient to inhibit the growth of the cotton plants and increase the yield thereof.

4,439,225

HERBICIDAL CYANO-TETRAHYDROFURANYLMETHYL ETHER AND CYANO-TETRAHYDROPYRANYLMETHYL ETHER DERIVATIVES

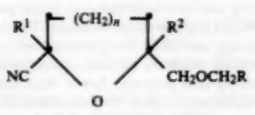
Willy D. Kollmeyer, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 14, 1982, Ser. No. 388,048

Int. Cl.³ A01N 43/06; C07D 307/24

U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



wherein R^1 and R^2 each independently is a hydrogen atom or an alkyl group containing 1 to 6 carbon atoms; n is 0 or 1; and R is an alkenyl or alkynyl group containing 2 to 4 carbon atoms; a 2-pyridinyl group; a 2-pyridazinyl group; a pyrazinyl group; a pyrimidinyl group, a 2-furanyl group; or a phenyl group optionally substituted by one or more of halogen, cyano, amino, or an alkoxy or alkylthio group containing 1 to 3 carbon atoms each optionally substituted by one or more halogen atoms having an atomic number of 9 or 17, or by an alkyl group containing 1 or 2 carbon atoms optionally substituted by one or more halogen atoms having an atomic number of 9 or 17, hydroxy or alkoxy or alkylthio containing 1 to 2 carbon atoms.

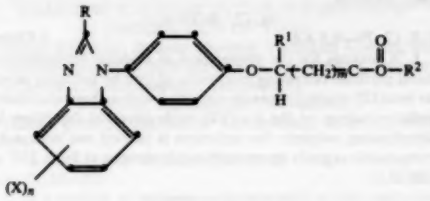
10. A method of regulating plant growth at a locus comprises applying to the locus or the plants an effective amount of a compound according to claim 1.

4,439,226
HERBICIDAL 4-((BENZIMIDAZOL-1-YL)PHENOXY)ALKANOIC ACIDS, ESTERS AND SALTS

Kurt H. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 20, 1982, Ser. No. 419,865
Int. Cl.³ A01N *43/52*; C07D *235/08*
U.S. Cl. 71—92 6 Claims

1. A compound of the formula:



wherein n is 1 and X is trifluoromethyl, R is hydrogen, methyl or ethyl, R^1 is methyl, ethyl or methoxymethyl; m is 0, 1 or 2; and R^2 is hydrogen, alkyl of from one to four carbon atoms, or when R^2 is hydrogen, an alkali metal, or ammonium ($N(R^3)_3$), salt wherein each R^3 is hydrogen or alkyl of from one to six carbon atoms.

5. A method for controlling growth of unwanted plants at a locus which comprises applying to that locus an effective amount of a compound of claim 1.

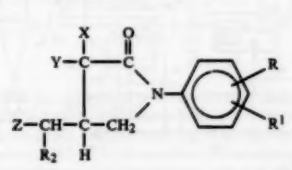
4,439,227
DIALLYL DICHLOROACETMIDE HERBICIDE ANTIDOTE

Laddie L. Green, San Jose, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 30, 1981, Ser. No. 335,949
Int. Cl.³ A01N *25/32*
U.S. Cl. 71—95 4 Claims

3. A method of controlling undesirable vegetation and reducing pyrrolidone-type herbicidal crop injury which comprises applying to the locus where control is desired an herbicidally effective amount of a composition comprising:

(a) an herbicidally effective amount of a pyrrolidone compound of the formula



in which

X is hydrogen, chlorine or methyl;

Y is hydrogen, chlorine, or bromine;

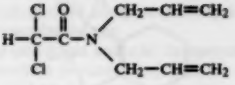
Z is chlorine is bromine;

R is hydrogen, alkyl, acetyl, chlorine, bromine, fluorine, iodine, trifluoromethyl, nitro, cyano, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, trifluoromethylthio, trifluoromethylsulfinyl, trifluoromethylsulfonyl, pentafluoropropionamido, or 3-methylureido;

R_1 is hydrogen, alkyl, chlorine, or trifluoromethyl; and,

R_2 is alkyl or hydrogen; and,

(b) a non-phytotoxic antidotally effective amount of a compound of the formula

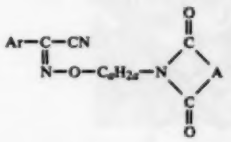


4,439,228
OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

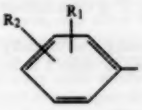
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,735. This application Jul. 14, 1982, Ser. No. 398,453
Claims priority, application Switzerland, Aug. 31, 1978, 9201/78
Int. Cl.³ A01N *43/36*; C07D *207/24*
U.S. Cl. 71—95 4 Claims

1. A compound of the formula



wherein

Ar is 1-naphthyl or



in which R_1 is hydrogen, lower alkyl, halogen or nitro, and R_2 is hydrogen or lower alkoxy,

a is the integer 1 or 2, and

A is ethylene or vinylene optionally di-substituted by halogen or lower alkyl.

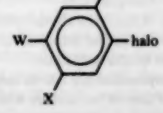
4. An antidote composition for use in safening plants against the harmful effects of potent herbicides, which comprises (1) an antidotally effective amount of a compound according to claim 1 and (2) an inert carrier.

4,439,229
SUBSTITUTED PHTHALIMIDES HERBICIDES

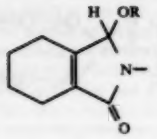
Colin Swithenbank, Perkasie, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

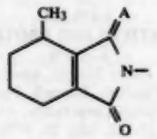
Continuation-in-part of Ser. No. 278,241, Jun. 29, 1981, abandoned. This application May 6, 1982, Ser. No. 375,248
Int. Cl.³ A01N *43/38*; C07D *209/48*
U.S. Cl. 71—96 21 Claims

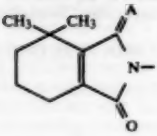
1. A compound of the formula

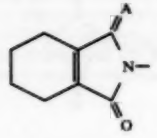


where W is a substituted heterocyclic selected from:









wherein A is O or S; halo is chloro, bromo or fluoro; R^1 and R^2 are the same or different radicals selected from hydrogen or lower alkyl; X is hydrogen or halo; Z is cyanoalkoxy; R is hydrogen or lower alkyl.

8. A herbicidal composition comprising a herbicidally effective amount of a compound according to claim 1 in an agronomically acceptable carrier.

4,439,230

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Werner Föry, Basel; Henry Martin, Allschwil, both of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

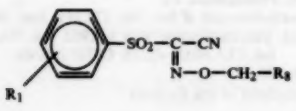
Division of Ser. No. 68,263, Aug. 20, 1979, Pat. No. 4,353,935. This application Jul. 14, 1982, Ser. No. 398,166

Claims priority, application Switzerland, Aug. 31, 1978, 9201/78

Int. Cl.³ A01N *43/38*; C07D *209/48*

U.S. Cl. 71—96 **3 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or halogen, and

R_8 is phthalimido, 4,5,6,7-tetrahydrophthalimido or 3a,4,7-,7a-tetrahydrophthalimido attached at the nitrogen atom to the remainder of the molecule.

3. An antidote composition for use in safening plants against the harmful effects of potent herbicides which comprises (1) an antidotally effective amount of a compound according to claim 1 and (2) an inert carrier.

4,439,231

PREPARATION OF ACICULAR FERROMAGNETIC METAL PARTICLES CONSISTING ESSENTIALLY OF IRON

Werner Steck, Ludwigshafen; Peter Rudolf, Neuhofen; Wilhelm Sarnecki, Limburgerhof; Werner Loeser, Ludwigshafen; Jenoe Kovacs, Hessheim, and Helmut Jakusch, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,000

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1982, 3228669

Int. Cl.³ B22F *9/22*

U.S. Cl. 75—0.5 AA **2 Claims**

1. A process for the preparation of acicular ferromagnetic metal particles consisting essentially of iron by reducing acicular iron(III) oxide hydroxide provided with a shape-stabilizing surface coating, or the iron(III) oxide obtained therefrom by dehydration, wherein the reduction is carried out with a decomposable organic compound and hydrogen at from 270° to 450° C.

4,439,232

SAMARIUM METAL PRODUCTION

Mohammad H. Ghandehari, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 26, 1982, Ser. No. 352,891

Int. Cl.³ C22B *4/00*

U.S. Cl. 75—10 R **13 Claims**

1. A method for producing samarium metal which comprises reducing samarium oxide in a container with rare earth metal, vaporizing the reduced samarium, and condensing a samarium metal product, wherein the container for the samarium oxide and rare earth metal is lined on its inner surface with resistant metal, said resistant metal having a thickness from about 0.001 inches to about 0.02 inches.

4,439,233

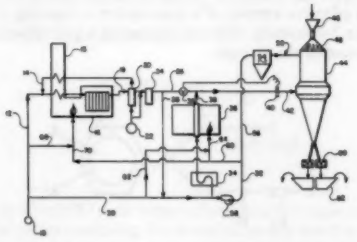
DIRECT REDUCTION OF IRON

Dominic M. Faccone, Matthews, N.C., assignor to Midrex Corporation, Charlotte, N.C.

Filed May 9, 1983, Ser. No. 492,526

Int. Cl.³ C21B *13/02*

U.S. Cl. 75—35 **11 Claims**



1. A method of making a high quality reducing gas for the direct reduction of iron, comprising:

introducing natural gas and steam into a reformer to form a high temperature reducing gas;

cooling said high temperature reducing gas to remove excess steam and form a cooled reducing gas;

dividing said cooled reducing gas into a first stream and a second stream;

withdrawing reacted top gas from a direct reduction shaft furnace, cooling and cleaning said reacted top gas, and mixing said reacted top gas with said first stream of reducing gas to form a gas mixture;

passing said gas mixture through a stoichiometric reformer to form a second hot reducing gas;

tempering said second hot reducing gas with said second stream of cooled reducing gas to form a high quality reducing gas; and

introducing said high quality reducing gas into a shaft furnace for the direct reduction of iron oxide therein and forming a reacted top gas.

4,439,234

METHOD OF INCREASING THE COLD MATERIAL CHARGING CAPACITY IN THE TOP-BLOWING PRODUCTION OF STEEL

Francois Schleimer; Romain Henrion; Ferdinand Goedert, and Fernand Thill, all of Esch-sur-Alzette, Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Feb. 16, 1983, Ser. No. 466,843

Claims priority, application Luxembourg, Feb. 17, 1982, 83954

Int. Cl.³ C21C 7/02

U.S. Cl. 75—52 12 Claims

1. In a method of refining a pig iron melt which comprises top-blowing said melt with oxygen while introducing an inert gas into the bottom of said melt and incorporating a cold solid charge into the melt, the improvement which comprises minimizing slag formation on said melt by adding slag-forming lime to said melt only in proportion to the buildup of slag components therein by the refining operation and over the duration of such buildup, thereby increasing the charge-receiving capacity of the melt.

4,439,235

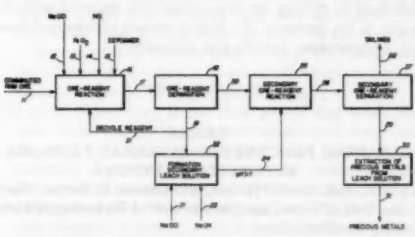
CHLORINATION PROCESS FOR REMOVING PRECIOUS METALS FROM ORE

Charles H. Simpson, Scottsdale, Ariz., assignor to James J. Shepard, Jr., Bedford, Pa.

Continuation-in-part of Ser. No. 345,597, Feb. 4, 1982, abandoned. This application Jun. 14, 1982, Ser. No. 388,112

Int. Cl.³ C22B 3/00, 11/04; C01G 55/00, 7/00

U.S. Cl. 75—101 R 2 Claims



1. A process for removing precious metal values from comminuted carbonaceous ores, comprising the steps of

(a) contacting said comminuted ore at an elevated temperature below 100° C. with an effective amount of an acidic aqueous solution of hypochlorite, iron ion and an acid to form an extraction mixture slurry including

(i) an aqueous liquid component including said hypochlorite, iron ion and acid and containing precious metal values from said comminuted ore dissolved therein, and

(ii) a solid component comprising said comminuted extracted ore,

(b) separating said liquid and solid components of said extraction mixture slurry,

(c) contacting said separated solid component of said extraction mixture slurry at an elevated temperature below 100° C. with an effective amount of an aqueous solution of hypochlorite and iron having a pH greater than 7 to form a secondary extraction mixture slurry including

(i) a secondary aqueous liquid component including said hypochlorite and iron ion and containing precious metal values from said comminuted ore dissolved therein; and

(ii) a secondary solid component comprising twice extracted comminuted ore,

(d) separating said liquid and solid components of said secondary extraction mixture slurry; and

(e) removing said precious metal values from said separated secondary liquid component.

4,439,236

COMPLEX BORIDE PARTICLE CONTAINING ALLOYS

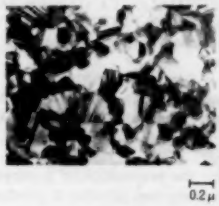
Ranjan Ray, Randolph, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 23,379, Mar. 23, 1979, Pat. No. 4,365,994. This application Apr. 26, 1982, Ser. No. 371,758

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ C22C 29/00, 38/32

U.S. Cl. 75—123 B 33 Claims



1. Boron-containing transition metal alloys, based on one or more of iron, cobalt and nickel, containing at least two metal components, said alloys being composed of ultrafine grains of a primary solid solution phase randomly interspersed with particles of complex borides, wherein said ultrafine grains of the primary solid solution phase have an average diameter, measured in its longest dimension, of less than about 3 micrometers, and wherein said complex boride particles have an average particle size, measured in its largest dimension, of less than about 1 micrometer, as viewed on a microphotograph of an electron microscope.

4,439,237

METALLURGICALLY BONDED DIAMOND-METAL COMPOSITE SINTERED MATERIALS AND METHOD OF MAKING SAME

Shiro Kuminitsu, Kawasaki; Izumi Hayakawa, Tokyo; Seizo Kitatani, Ina, and Akira Emura, Tokyo, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 51,179, Jun. 22, 1979, abandoned. This application Sep. 25, 1981, Ser. No. 305,751

Claims priority, application Japan, Jun. 27, 1978, 53-77787

Int. Cl.³ B22F 3/00

U.S. Cl. 75—243 8 Claims

1. A metallurgically bonded, sintered, diamond-metal composite, comprised of a matrix consisting essentially of a metal selected from the group consisting of nickel, cobalt and mixture thereof, diamond powder uniformly dispersed in said matrix and particles of hard, brittle, intermetallic compound uniformly dispersed in said matrix, said composite having been prepared by mixing powder of said matrix metal, said diamond powder and powder of substance capable of combining with said matrix metal to form said intermetallic compound, said substance being selected from the group consisting of tin, antimony, zinc and mixture thereof, the amount of said substance being from 5 to 40 wt.%, and then sintering the mixture until said intermetallic compound is formed.

2. A metallurgically bonded, sintered, diamond-metal com-

posite, comprised of a matrix consisting essentially of a metal selected from the group consisting of nickel, cobalt and mixture thereof, diamond powder uniformly dispersed in said matrix and particles of hard, brittle, intermetallic compound uniformly dispersed in said matrix, said composite having been prepared by mixing powder of said matrix metal, said diamond powder and powder of substance capable of combining with said matrix metal to form said intermetallic compound, said substance being selected from the group consisting of phosphorus, sulfur and mixture thereof, the amount of said substance being from 0.2 to 3 wt.%, and then sintering the mixture until said intermetallic compound is formed.

4,439,238

COPPER PHTHALOCYANINE PIGMENTS THEIR PREPARATION PROCESS AND THEIR USE

Daniel Pigasse, Rouen, France, assignor to I.C.I. Francolor S.A., Cedex, France

Continuation of Ser. No. 249,520, Mar. 31, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 431,931

Claims priority, application France, Apr. 18, 1980, 80 08722

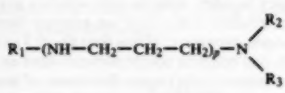
Int. Cl.³ C09D 11/00

U.S. Cl. 106—20 **18 Claims**

1. Process for the preparation of a copper phthalocyanine pigment which comprises grinding a grinding mass consisting essentially of raw copper phthalocyanine without mineral substrate and incorporating either:

(1) before or during the grinding:

(a) 0.5 to 10% by weight of at least one fatty amine of formula (I):



(I)

in which R_1 represents a non-aromatic, C_1 to C_{22} aliphatic or alicyclic hydrocarbon chain, R_2 represents hydrogen or a non-aromatic, C_1 to C_{22} aliphatic or alicyclic hydrocarbon chain, the sum of the carbon atoms of chains R_1 and R_2 is between 6 and 50, R_3 represents hydrogen or a C_1 to C_4 aliphatic radical, and p is a number from 0 to 20;

(b) said fatty amine and 1 to 10% by weight relative to pure copper phthalocyanine of at least one solvent whose miscibility with water is at least 3% at a temperature between ordinary temperature and 100° C., the overall content of amine and solvent not exceeding 15% by weight;

(c) said fatty amine and 1 to 10% by weight relative to pure copper phthalocyanine of at least one non-volatile compound comprising a hydrocarbon chain of 6 to 22 carbon atoms and one or more polar functions, the overall content of amine and non-volatile compound not exceeding 12% by weight; or

(d) said fatty amine, said solvent and said non-volatile compound, the overall content of amine, solvent and non-volatile compound not exceeding 15% by weight, and eventually treating the mass in aqueous medium to eliminate impurities; or

(2) after the grinding and during an aqueous treatment to purify the copper phthalocyanine:

(a) 1 to 10% by weight of at least one fatty amine of said formula (I); or

(b) said fatty amine and 1 to 10% by weight of at least one non-volatile compound.

4,439,239

PIGMENTED COATING COMPOSITION CONTAINING A MIXTURE OF ALKOXYSILANES

Paul P. Greigger, Allison Park; William G. Boberski, Gibsonia, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 2, 1982, Ser. No. 384,369

Int. Cl.³ C09K 3/14; B32B 9/04

U.S. Cl. 106—287.16 **7 Claims**

1. A composition comprising:

I. a pigment in an amount ranging from about 10 to about 80 percent by volume solids based on the total volume of solids present in said composition; in

II. a vehicle comprising,

A. a dispersion of colloidal silica,

B. a mixture of (i) a hydrolyzable trialkoxysilane and (ii) a hydrolyzable dialkoxysilane,

C. an alcohol,

D. water, and

E. sufficient acidifying agent to provide a pH of the vehicle ranging from about 2.8 to about 6.0, wherein the ratio of the weight of the pigment to the weight of the sum of colloidal silica solids and alkoxysilane solids ranges from 0.1/1 to about 10/1, the alkoxysilane solids calculated assuming theoretically complete hydrolysis of the respective alkoxysilanes to the corresponding silanols, and wherein said composition cures to provide an opaque film.

4,439,240

AQUEOUS MILLING OF QUINACRIDONE PIGMENT

James B. Ganci, Wilmington, Del., assignor to E. I. Du Pont De Nemours & Company, Wilmington, Del.

Filed Feb. 16, 1983, Ser. No. 466,938

Int. Cl.³ C08J 3/00

U.S. Cl. 106—288 Q **5 Claims**

1. A process comprising dry ball milling crude quinacridone to convert it to a highly agglomerated low crystallinity form, followed by milling the low crystallinity material with shot in water in the presence of a minor amount of base and recovering a pigmentary particle size pigment.

4,439,241

CLEANING PROCESS FOR INTERNAL PASSAGES OF SUPERALLOY AIRFOILS

Earle A. Ault, South Windsor, and Charles E. Bevan, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 1, 1982, Ser. No. 353,764

Int. Cl.³ B08B 3/08

U.S. Cl. 134—22.17 **3 Claims**

1. The method for removing deposits from interior cavities of a component made of superalloy, comprising the steps of contacting the interior of the component with an aqueous solution of 20–45 weight percent alkaline corrosive at a pressure of 10.4–24 kPa (150–350 psi) and a temperature of 150°–235° C. (300°–450° F.) to soften the deposits without significantly attacking the superalloy; removing the component from contact with the aqueous solution, thereby leaving some of the softened deposits physically intact within the interior cavities; impinging on said deposits a flowing stream of liquid at a pressure of at least 13.8 MPa (2,000 psi), to physically remove the deposits; and wherein the component is contacted with an aqueous environment to prevent drying of the softened deposits between the time of removal of the component from said aqueous solution and the time of impinging said flowing stream of liquid on the softened deposits.

4,439,242
LOW HOT WATER VOLUME WAREWASHER

James P. Hadden, Tipp City, Ohio, assignor to Hobart Corporation, Troy, Ohio

Continuation of Ser. No. 263,956, May 15, 1980, abandoned.
This application Oct. 18, 1982, Ser. No. 435,019
Int. Cl.³ B08B 3/02
U.S. Cl. 134—25.2 4 Claims

1. In a commercial dishwasher, a complete warewasher cycle for (1) washing food soil from successive racks of ware such as dishes and utensils with a cleaning solution of water and detergent, (2) rinsing the ware with fresh water, and (3) effectively sanitizing the ware to a cumulative heat factor level over the complete cycle to meet accepted heat sanitization practices, comprising the steps of:

(a) loading soiled ware into the racks and placing a loaded rack in a substantially enclosed wash chamber of a warewashing machine,

(b) recirculating a supply of cleaning solution in said chamber under pressure through nozzles which direct the solution over the ware in sufficient volume and at a predetermined washing temperature with sufficient velocity and for a predetermined washing time period effective to strip the soil from and thereby wash the ware,

(c) maintaining said cleaning solution supply at a minimum washing temperature during the washing time period,

(d) upon completion of the washing time period, providing a short dwell period during which soiled solution can drain from the ware, then

(e) sanitizing the ware by sequentially:

(i) rinsing the ware for a predetermined rinse period with fresh rinse water heated to a minimum sanitizing temperature greater than said washing temperature and delivered through rinse nozzles dedicated solely to said rinse water and directed toward the ware, said rinse water being delivered in a volume sufficient to rinse loose food soil and remaining cleaning solution from the ware and achieve a substantial reduction in water volume in order to conserve energy, and said rinse period being of a duration whereby the surfaces of the ware rise from the temperature achieved during washing to a higher temperature to apply heat unit equivalents per second of time to said ware between an approximate minimum of 40% but less than 100% of the cumulative heat factor level required by accepted sanitization practices to achieve effective sanitization, and,

(ii) upon completion of the rinse period and while the ware is still exposed to the accumulated rinse water and cleaning solution, maintaining the ware within a substantially enclosed chamber for a time period, in addition to any inherent time delay of a cycle controller, sufficient to allow the heated humid atmosphere within said chamber achieved without further addition of heat except from the heated fresh rinse water to apply to the ware surfaces additional heat unit equivalents, which, coupled with those applied during prior washing and rinsing, raises the cumulative heat factor for the complete warewasher cycle above the minimum level required to effectively sanitize the ware, and then

(f) removing the clean, sanitized ware from the machine.

4,439,243
APPARATUS AND METHOD OF MATERIAL REMOVAL WITH FLUID FLOW WITHIN A SLOT

Stephen D. Titus, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1982, Ser. No. 404,678
Int. Cl.³ B08B 7/00
U.S. Cl. 134—33 16 Claims

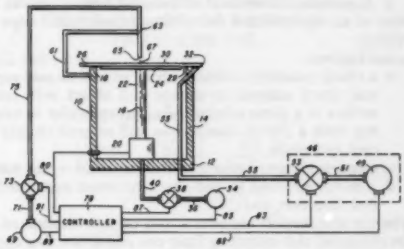
1. Apparatus for removing material from a convex outer edge of an object having a flat surface adjacent thereto, comprising:

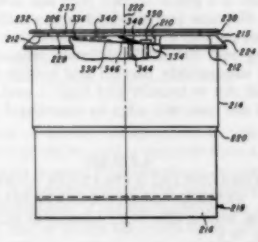
a. a means defining a source of fluid under pressure to dissolve said material;

b. a support provided with a planar surface having an arcuate slot therein elongated in a certain direction and in hydraulic communication with said source for receiving fluid therefrom through an opening, said slot with a bottom extending from one end in said first direction to another opposite end and having a first depth from said planar surface at said one end and sloping to a second depth from said planar surface less than said first depth at said one end;

c. a baffle attached to said support within said slot and extending adjacent to said opening to direct said fluid in said certain direction; and

d. a chuck movably mounted onto said support and adapted to engage said object with said flat surface closely adjacent said planar surface for moving said flat surface adjacent said slot in said certain direction transferring said fluid by contact to said flat surface and by centrifugal force to said edge.





15. A method of removing material from a convex, outer edge of an object having a flat surface adjacent said edge comprising the steps of:

a. providing a fluid under pressure to dissolve said material at an arcuate slot in a planar surface of a support with said slot elongated in a certain direction and sloping from one end to another end opposite said one end in said certain direction and toward said flat surface;

b. directing said fluid from adjacent said one end toward said another end; and

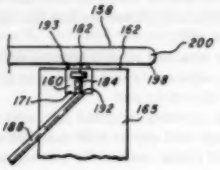
c. moving said flat surface parallel to said planar surface and closely adjacent said slot to transfer said fluid by contact to said flat surface and from said flat surface by centrifugal force onto said edge.

4,439,244

APPARATUS AND METHOD OF MATERIAL REMOVAL HAVING A FLUID FILLED SLOT

Tony E. Allevato, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1982, Ser. No. 404,798
Int. Cl.³ B08B 7/00
U.S. Cl. 134—33 **9 Claims**



1. Apparatus for removal of material from a convex outer edge of an object with a flat surface adjacent said edge comprising:

a. a support;

b. a chuck rotatably mounted about an axis on said support, said chuck adapted to engage said object with said flat surface in a plane substantially perpendicular to said axis and with a certain location on said support closely adjacent said plane;

c. a means defining a source of fluid to dissolve said material;

d. a motor attached to said chuck to rotate said chuck in a first direction; and

wherein said support includes at said certain location an arcuate elongated slot extending from one end to another opposite end approximately in said first direction and in hydraulic communication with said source to transfer said fluid to said flat surface while said object is rotated.

8. A method for removing material from a convex outer edge of an object having a flat surface adjacent said edge comprising the steps of:

a. supplying fluid under pressure for dissolving said material into a slot in a planar surface with said slot elongated in a certain direction and provided with a baffle for directing said fluid parallel to said certain direction; and

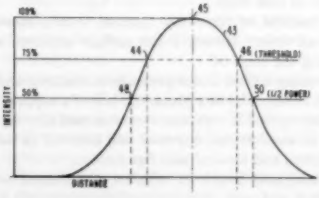
b. rotating said flat surface closely adjacent said planar surface substantially parallel said certain direction adjacent said slot to transfer said fluid to said flat surface by contact and onto said edge by centrifugal force.

4,439,245

ELECTROMAGNETIC RADIATION ANNEALING OF SEMICONDUCTOR MATERIAL

Chung P. Wu, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,473
Int. Cl.³ H01L 21/263; B23K 27/00
U.S. Cl. 148—1.5 **7 Claims**



1. A method of annealing a semiconductor material having covalent bonds comprising the steps of:

irradiating the surface of a body of said material with a beam of electromagnetic radiation having a wavelength that is sufficiently small to absorb the photon energy of the beam substantially only to the desired depth of the surface to be annealed and sufficient power only to break the covalent bonds without undue melting of the material;

pulsing the beam to provide a duration of each pulse that is 50 nanoseconds or less so as to reduce towards a minimum the diffusion depth of electrons and holes in said material caused by the absorbed energy; and

providing the diameter of the beam to be significantly greater than the desired annealing depth to reduce convective flow of the material;

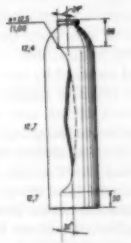
whereby said material is crystallized into a single crystal by annealing without raising the temperature of said material to its melting temperature.

4,439,246

METHOD OF MAKING HOLLOW BODIES UNDER PRESSURE FROM ALUMINUM ALLOYS

Roger Develay, Seyssinet Pariset, and Marc Anagnostidis, Chamalieres, both of France, assignors to Societe Metallurgique de Gerzat, Paris, France

Filed Jul. 1, 1982, Ser. No. 394,179
Claims priority, application France, Jul. 22, 1981, 81 14790
Int. Cl.³ C22F 1/04; C22C 21/10
U.S. Cl. 148—2 **5 Claims**



1. A method of manufacturing a hollow body under pressure from an aluminum alloy, comprising the steps of:

(1) preparing an alloy of a composition consisting of (by weight) $5.6 \leqq Zn \leqq 6.1$, $2.0 \leqq Mg \leqq 2.4$, $1.3 \leqq Cu \leqq 1.7$, $0.15 \leqq Cr \leqq 0.25$, $Fe \leqq 0.10$, $Fe+Si \leqq 0.25$, $Mn \leqq 0.04$, $Zr \leqq 0.03$, $Ti \leqq 0.04$, with the remainder of the alloy being aluminum and impurities with the total amount of impurities being no more than 0.15 with the maximum amount of any given impurity being 0.05;

(2) casting the alloy in the form of a billet;

(3) hot extruding a billet at a temperature between 350° and 450° C. by the indirect process into the form of a case;

(4) drawing out the resultant case hot then cold;

(5) hot necking the drawn case between 350° and 450° C.;

(6) solution annealing the hot necked case between 450°and 490° C. and quenching the case with water at a temperature below 40° C; and

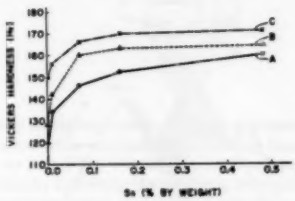
(7) two step tempering (type T73) the quenched case.

4,439,247

METHOD FOR MANUFACTURE OF HIGH-STRENGTH HIGH-ELECTROCONDUCTIVITY COPPER ALLOY

Kishio Arita; Toshio Takahashi, both of Musashino; Akio Miyoshi; Hajime Izumimori, both of Ichikawa, and Mitsushi Ishida, Tokyo, all of Japan, assignors to Sumitomo Metal Mining Company Limited; Nippon Telegraph and Telephone Public Corporation and Nippon Telecommunication Engineering Company Limited, all of Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,556
Claims priority, application Japan, Nov. 30, 1981, 56-193392
Int. Cl.³ C22F *1/08*
U.S. Cl. 148—2 **6 Claims**



1. A method for manufacturing a copper alloy which displays a tensile strength of 50 kg/mm^2 or more and an electroconductivity of 80% I.A.C.S. or more and is useful in fabricating lead frames for integrated circuits, said method avoiding any solid solution treatment steps and comprising

(a) providing a copper alloy mass which consists essentially of 0.2 to 1.5% by weight chromium, 0.01 to 0.5% by weight tin, the balance being copper,

(b) casting said copper alloy mass of step (a) without quenching,

(c) hot working the cast copper alloy mass of step (b) at a temperature of between 800° to 950° C.,

(d) cooling said hot worked, cast copper alloy mass of step (c),

(e) cold working said cooled, cast copper alloy mass of step (d), and

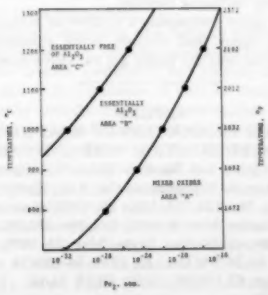
(f) aging the cold worked, cast copper alloy mass of step (e).

4,439,248

METHOD OF HEAT TREATING NICRALY ALLOYS FOR USE AS CERAMIC KILN AND FURNACE HARDWARE

Robert B. Herchenroeder, Kokomo, and George Y. Lai, Carmel, both of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Feb. 2, 1982, Ser. No. 345,260
Int. Cl.³ C22F *1/00*
U.S. Cl. 148—6.2 **7 Claims**



1. The method for producing furnace and kiln hardware articles for use in the manufacture of metallic and ceramic products including the steps of:

a. providing an alloy consisting essentially of, in weight percent, 8 to 25 chromium, 2.5 to 8 aluminum, a small but effective yttrium content not exceeding 0.1, and the balance nickel and impurities plus modifying elements optionally selected from the groups; up to 15 total Mo, Rh, Hf, W, Ta and Cb; up to 0.5 total C, B, Mg, Zr and Ca; up to 1 Si, up to 2 Mn, up to 20 Co, up to 5 Ti, and up to 30 Fe, and

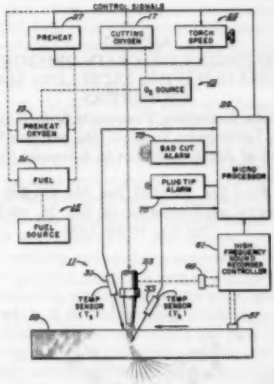
b. fashioning said alloy into said article with a required shape for said use, and characterized by heat treating said fashioned article for an effective time in an oxygen potential controlled atmosphere with an oxygen partial pressure and between about 1500° and 2372° F. as indicated in area "B" in the attached FIG. 1 to provide an essentially aluminum oxide film on the surface of said article.

4,439,249

AUTOMATED CUTTING OF PLATE STEEL

Gurvinder P. Singh, and William D. Jolly, both of San Antonio, Tex., assignors to Victor Equipment Company, Denton, Tex. and ESAB North America, Inc., Fort Collins, Colo.

Filed Jun. 22, 1983, Ser. No. 506,863
Int. Cl.³ B23K *7/02*
U.S. Cl. 148—9 R **27 Claims**



1. In a method of cutting metallic plate in which fuel and oxygen are admixed and burned as they exit from a torch tip as a pre-heat flame for heating a spot on the metal plate, in which cutting oxygen is directed through the hot molten metal spot on the plate to complete a cut therethrough, in the process forming a kerf, and in which the torch tip is moved along a predetermined path to cut the metallic plate therealong, the improvement comprising:

a. sensing the temperatures at a plurality of points adjacent the top and in the kerf of the cut of the metal plate; and

b. responsive to the sensed temperatures, making appropriate pre-designated changes to effect more nearly optimum cut of the steel plate.

4,439,250

SOLDER/BRAZE-STOP COMPOSITION

Shankar C. Acharya, Beacon; Thomas C. Prizzia, Wappingers Falls, and Olha Rutigliano, Beacon, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1983, Ser. No. 502,802
Int. Cl.³ B23K *35/34*
U.S. Cl. 148—23 **9 Claims**

1. A solder/braze-stop composition, comprising by weight:
40–57% Al_2O_3 powder;
27–43% Methyl Isobutyl Ketone; and
12–22% of a vehicle comprising by weight:

15–20% Ethyl Cellulose;
75–80% 2-(2-Butoxyethoxy)Ethyl Acetate; and,
5–10% Oleoyl Sarcosine.

4,439,251

NON-ORIENTED ELECTRIC IRON SHEET AND METHOD FOR PRODUCING THE SAME

Yoshiaki Shimoyama; Ichiro Tachino, and Shigenobu Koga, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 76,734, Sep. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 47,995, Jun. 13, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 286,754
Claims priority, application Japan, Jun. 16, 1978, 53-72097
Int. Cl.³ C04B *35/00*
U.S. Cl. 148—31.55 **4 Claims**

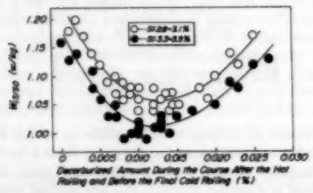
1. A non-oriented magnetic material produced by hot-rolling a slab consisting essentially of ≦0.065% C, ≦0.10% Al, 0.31 to 3.15% Si, ≦0.020% O, ≦0.01% N and B being present in such amounts that the ratio of B/N is in the range of 0.50 to 2.50, and the rest being Fe and unavoidable impurities to obtain a hot-rolled sheet, subjecting the thus-obtained hot-rolled sheet to at least one cold-rolling step with intermediate annealing, when a plurality of steps is used, followed by a continuous annealing step to produce a non-oriented magnetic material.

4,439,252

METHOD OF PRODUCING GRAIN-ORIENTED SILICON STEEL SHEETS HAVING EXCELLENT MAGNETIC PROPERTIES

Katsuo Iwamoto, Kakogawa; Tomomichi Goto, Kobe; Yoshinori Kobayashi, Takarazuka; Yoshiaki Iida, and Isao Matoba, both of Kobe, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sep. 23, 1982, Ser. No. 421,809
Claims priority, application Japan, Sep. 26, 1981, 56-152466
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **8 Claims**



1. In a method of producing grain-oriented silicon steel sheets having excellent magnetic properties, comprising a step of hot rolling a silicon steel having a composition containing, in % by weight, 2.8–4.0% of Si, 0.02–0.15% of Mn and 0.008–0.080% of a total amount of at least one of S and Se into a hot rolled steel sheet, a step of coiling the hot rolled steel sheet, a step of subjecting the coiled steel sheet to two or more cold rollings with an intermediate annealing between them, wherein the final cold rolling is carried out at a reduction rate of 40–80%, to produce a finally cold rolled steel sheet having a final gauge, and steps of subjecting the finally cold rolled steel sheet to a decarburization annealing and then to a final annealing, an improvement comprising said silicon steel having a C content, depending upon the Si content, within the range defined by the following formula

$$0.37[Si\%]+0.27 \leqq \log([C\%]\times 10^3) \leqq 0.37[Si\%]+0.57$$

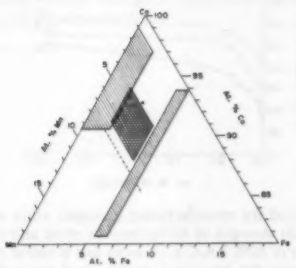
wherein [Si%] and [C%] represents contents (% by weight) of Si and C in the steel, respectively; and removing 0.006–0.020% by weight of C from the steel during the course after the completion of the above described hot rolling and just before the beginning of the above described final cold rolling.

4,439,253

COBALT RICH MANGANESE CONTAINING NEAR-ZERO MAGNETOSTRICTIVE METALLIC GLASSES HAVING HIGH SATURATION INDUCTION

V. R. V. Ramanan, Randolph, N.J., assignor to Allied Corporation, Morristown, N.J.

Filed Mar. 4, 1982, Ser. No. 354,824
Int. Cl.³ C22C *19/00*
U.S. Cl. 148—403 **24 Claims**



1. A magnetic alloy which is at least about 70% glassy, has a combination of near-zero magnetostriction ranging from about −1 ppm to +5 ppm, high permeability of at least about 5,000, when measured with a driving field of 1 kHz frequency that produces an induction level of 0.01 T, and high saturation induction of at least about 1.09 T, and which is described by the formula $[Co_aFe_{1-a}]_{100-(b+c)}Mn_bB_{c-d}Si_d$, where "a" ranges from about 0.90 to 0.99, "b" ranges from about 2 to 6 atom percent, "c" ranges from about 14 to 20 atom percent and "d" ranges from about 0 to 7 atom percent with the proviso that the minimum B present is 10 atom percent.

4,439,254

SOLID SENSITIZERS IN WATER GEL EXPLOSIVES AND METHOD

John J. Mullay, Hazelton, Pa., assignor to Atlas Powder Company, Dallas, Tex.

Filed Apr. 5, 1982, Ser. No. 365,788
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **30 Claims**

1. In a water gel explosive composition comprising inorganic oxidizing agents, water, and gelling agents, the improvement comprising including therein:

a sensitizing agent comprising a mixture of aluminum and a densifying agent, said mixture being admixed prior to incorporation into the water gel explosive composition.

4,439,255

PROCESS FOR PRODUCTION OF HEAT RESISTANT INSULATED ELECTRIC WIRE AND CABLE

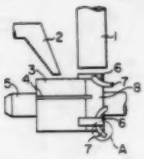
Takeshi Imai, Oobu, and Naohiro Kako, Takahama, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 131,767, Mar. 19, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,502
Claims priority, application Japan, Mar. 23, 1979, 54-34790; Mar. 23, 1979, 54-34791; Dec. 10, 1979, 54-160674
Int. Cl.³ B21F *15/02*; H01B *13/00*
U.S. Cl. 156—49 **11 Claims**

1. A method for connecting a heat-resistant insulated electric wire to another electrical conductor which methods comprises the steps of:

(1) applying an insulating layer on a conductor by coating

the conductor with a dispersion of an inorganic substance which dispersion contains a binder therein;
(2) heating said inorganic dispersion layer to a temperature below the melting point of the inorganic substance; then
(3) forming an organic insulating layer on said inorganic substance layer to form an insulated electric wire;
(4) pushing the insulated electric wire against another electric conductor; and



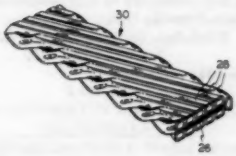
(5) passing an electric current through said another electric conductor while continuing said pushing thereby heating only the part of the wire being pushed to a high temperature thereby deforming the insulating layer and destroying the insulating layers, consisting of said organic insulating layer and said inorganic substance insulating layer, by the high temperature and the pushing force on only that portion of the wire being pushed, thereby electrically wlding said electric conductor to said another electric conductor to form an electrical connection between them.

4,439,256

METHOD OF PRODUCING FLAT STRANDED MAGNETIC CONDUCTOR CABLE

Robert F. Meserve, Lisbon, N.H., assignor to New England Electric Wire Corporation, Lisbon, N.H.

Filed Feb. 18, 1981, Ser. No. 235,706
Int. Cl.³ H01B *13/00*
U.S. Cl. 156—50 **2 Claims**



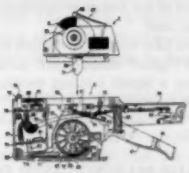
1. In a method for the manufacture of a flat, rectangular cable comprised of two layers of compacted, helically wound coated conductors and an interposed strip of insulating sheet material, the steps comprising:
(a) continuously supplying to a forming station a longitudinally advancing and rotating generally circular array of at least four coated conductors, and forming the conductors into a helical configuration of circular cross-section;
(b) gradually transforming the cross-section of said array from circular to a flat elliptical configuration;
(c) continuously feeding a strip of insulating sheet material longitudinally into the center of said array of conductors;
(d) comprising said conductors tightly about said insulating strip to transform said elliptical structure into a cable of generally rectangular cross-section in which said conductors are densely packed to provide less than about 15 percent of void space in said cable and are disposed substantially in two layers with said strip interposed therebetween, said strip and the coating on said conductors providing electrical insulation between said layers as well as between the individual conductors; and
(e) continuously withdrawing the cable so produced from said forming station.

4,439,257

LABEL PRINTING AND APPLYING APPARATUS

Yo Sato, Tokyo; Tadao Kashiwaba, Kitagami, and Yasuhiko Matsuda, Hanamaki, all of Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Mar. 2, 1982, Ser. No. 354,060
Claims priority, application Japan, Mar. 5, 1981, 56-30525
Int. Cl.³ B65C *9/18, 11/00*
U.S. Cl. 156—64 **20 Claims**



1. A label printing and applying apparatus, comprising:
a printer for printing labels in a web of a series of labels, the printer including printing means for printing labels as the web of labels is moved past the printing means, and including feed means for advancing the web of labels past the printing means to a receiving means;
a label holder having a body adapted to seat upon the printer; removably attachable to the printer, the label holder including receiving means supported on the label holder body for receiving and holding the label web that is fed to the receiving means by the feed means, after label printing by the printing means; and
a label applier, the label holder body also being adapted to seat upon the label applier and being removably attachable to the label applier; the label applier including means for feeding the label web from the label holder to the label applier; the label applier including an exit for labels of the label web, where labels may be removed from the label applier, and the label applier feeding means feeding the label web to the exit of the label applier.

14. A label printing and applying apparatus, comprising:
a printer for printing labels in a web of a series of labels, the printer including printing means for printing labels as the web of labels is moved past the printing means, and including feed means for advancing the web of labels past the printing means to a receiving means;
a label holder removably attachable to the printer, the label holder including receiving means for receiving and holding the label web that is fed to the receiving means by the feed means, after label printing by the printing means; and
a label applier, the label holder being removably attachable to the label applier; the label applier including means for feeding the label web from the label holder to the label applier; the label applier including an exit for labels of the label web, where labels may be removed from the label applier, and the label applier feeding means feeding the label web to the exit of the label applier;
memory circuit means at the label holder for remembering the indicia printed upon the labels at the printing means while the label holder is attached to the printer and for providing an indication of the remembered indicia when the label holder is attached to the label applier.

4,439,258

METHOD FOR COVERING WITH CYLINDRICALLY SHAPED HEAT-SHRINKABLE FILM

Hitoshi Toma; Tomohiro Kimura, both of Kawasaki, and Hideyo Kondo, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,928
Claims priority, application Japan, May 26, 1981, 56-80622
Int. Cl.³ B29C *27/20*
U.S. Cl. 156—86 **4 Claims**

1. A method for covering with a cylindrically shaped heat-shrinkable film, which comprises the steps of:

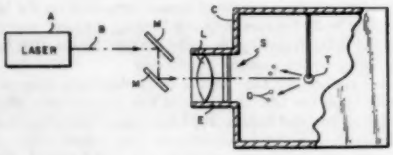
covering a substrate with a cylindrically shaped heat-shrinkable film;
subjecting said cylindrically shaped heat-shrinkable film to a first shrinking at the portion of the film corresponding to the lower end of said substrate at a temperature of the higher temperature zone in the heat-shrinkable temperature range of said film;
subjecting said film, except for the portion corresponding to the upper end of said substrate, to a second shrinking at a temperature of the lower temperature zone in said temperature range; and
subjecting said film wholly to a third shrinking at a temperature of the higher temperature zone in said temperature range, using a liquid heating medium for heating in the above steps of shrinking.

4,439,259

METHOD OF MAKING LASER FUSION DEBRIS SHIELD

Bruce K. Flint, Acton, Mass., assignor to Acton Research Corporation, Acton, Mass.

Division of Ser. No. 227,984, Jan. 23, 1981, abandoned. This application Oct. 1, 1982, Ser. No. 432,274
Int. Cl.³ G02B *1/04*; B29G *1/00*
U.S. Cl. 156—245 **6 Claims**



1. The method of making a high energy reaction debris shield comprising:
applying a release coat to the opposable faces of two supports;
applying a liquid, transparent epoxy compound on the coat of one support and pressing the two supports face to face to shape an epoxy shield between the faces, and allowing the epoxy to cure;
removing at least one support at the release coat and attaching a holder at the periphery of the shield; and
removing the release coat from the shield to form a window optically transparent and physically resistant to the high energy and physically obstructive of reaction debris.

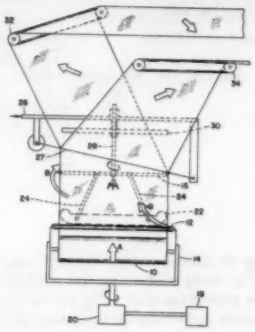
4,439,260

METHOD AND APPARATUS FOR FORMING CROSS-LAMINATED THERMOPLASTIC FILM

Peter J. Canterino, Towaco, and Craig E. Allen, Clark, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,705
Int. Cl.³ B32B *31/02*
U.S. Cl. 156—259 **20 Claims**

1. A method for forming a continuous cross-laminated, bias-slit web from a supply roll of a layflat, highly machine direction oriented tubular thermoplastic film comprising the steps of:
(a) advancing the tubular film over a mandrel in the longitudinal direction of the film while concurrently rotating said supply roll about a rotation axis perpendicular to an axis of said roll, thereby imparting rotation to said film without molecularly orienting it;
(b) inflating said tubular film intermediate said supply roll and said mandrel to a pressure preventing collapse of said film;
(c) slitting said tubular film downstream of said mandrel at a predetermined bias relative to the movement thereof providing at least two film strips adapted to be superimposed to form said continuous laminated web, said steps (a), (b) and (c) being performed in a manner which does not change the molecular orientation inherent in said tubular film, but which produces in said two strips slit from said tubular film a molecular orientation which has



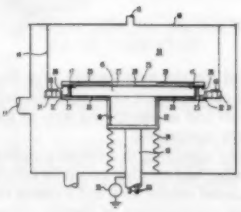
components in both the machine and transverse direction, with the molecular orientation in one of said strips crossing that in the other of said strips; and
(d) laminating said two strips together so that the molecular orientation of one crosses the molecular orientation of the other to form a cross-biased laminated film.

4,439,261

COMPOSITE PALLET

Peter J. Pavone, and Richard D. Van Demark, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1983, Ser. No. 526,745
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—345 **11 Claims**



1. A reactive ion etching system comprising:
a vessel;
a disc-shaped cathode within said vessel, said cathode being connected to a radio frequency source; and
a disc-shaped pallet including a top insulating layer for holding a plurality of semiconductor wafers thereon, and a bottom conducting layer, the diameter of said pallet being greater than the diameter of the cathode and said pallet bottom conducting layer being adjacent said cathode and electrically connected thereto,
whereby said bottom conducting layer is an extension of said cathode over the entire pallet diameter to achieve uniform reactive ion etching on all portions of the pallet.

4,439,262

LABELING STATION FOR ARTICLES LIKE BOTTLES

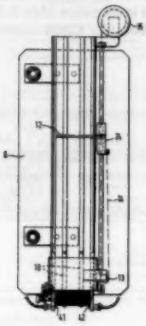
Rudolf Zodrow, Düsseldorf; Egon Höveler, Haan, and Heinz-Jürgen Rosenberg, Neuss, all of Fed. Rep. of Germany, assignors to Jagenberg AG, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,143

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112077; Feb. 16, 1982, 3205414

Int. Cl.³ B65C *9/10, 9/16*

U.S. Cl. 156—364 16 Claims



1. In a labeling station that is intended for articles like bottles, that has at least one revolving or pivoting label grasper-applicator with a capture-and-release surface for taking a label from a stack and applying it to an article to be labeled, and that has holders that hold the edge of the stack of labels, the improvement which comprises controls for the holders (41, 42) or supplementary holders (45, 46) that hold the edge of the stack so that the retentive force the holders exert on the labels can be adjusted to be made greater than the attractive force exerted by the catpure-and-release surface of the grasper-applicator (2, 3, 4) and, when the stack is held in a moving magazine, than the inertia exerted by the stack of labels on the stack holders as the magazine (6) moves backwards, the controls haivng a detector that scans the series of articles to be labeled and actuates the controls and the holders (41, 42 or 45, 46) when it senses a conditon calling for a label not to be applied.

4,439,263

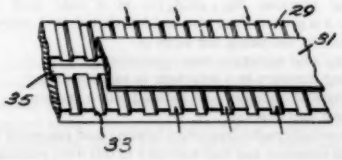
METHOD AND APPARATUS FOR BONDING PLASTIC MATERIALS

James S. Hardigg, South Deerfield; E. Wayne Turner, Deerfield, and Joseph C. Strzegowski, Jr., Conway, all of Mass., assignors to Hardigg Industries, Inc., South Deerfield, Mass.

Continuation of Ser. No. 68,560, Aug. 22, 1979, abandoned, which is a continuation of Ser. No. 862,560, Dec. 20, 1977, abandoned. This application May 19, 1981, Ser. No. 265,215

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—497 9 Claims



1. A system for welding two pieces of thermoplastic material to one another consisting essentially of:

means for heating at least one edge of each of said pieces to at least the fusion temperature of the thermoplastic;

means for joining said heated edges to one another under pressure to thereby form a welded junction, said pressure causing a bead of plastic material to be formed on at least one side of said welded junction; and

means for quickly heating said bead of plastic material to about its fusion temperature and rapidly cooling said heated bead to a temperature below said fusion temperature, wherein said means for heating and cooling comprises:

a continuous strip of electrically conducting material of high electrical resistivity, attached to a source of electricity;

means for supporting said strip, having an opening in the center thereof, wherein said strip is disposed over said opening;

a frame, defining an enclosed space and having an opening in a surface thereof which allows access from outside of the frame into said enclosed space, to which said strip and support means are attached, so that the opening in said support coincides with the opening in said surface;

means, in communication with said enclosed space, for drawing ambient air from the outside, through an opening of said support and, in turn, through the opening into said enclosed space; and

whereby heat can be generated by passing an electric current through said strip and whereby cooling can be effected by actuating said means for drawing ambient air under reduced pressure to draw said air through said opening in said support means and, in turn, through the opening in the surface of said frame.

4,439,264

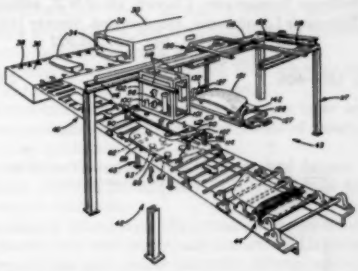
METHOD AND APPARATUS FOR ASSEMBLING SANDWICHES COMPRISING HOT BENT GLASS SHEETS

James L. Valimont, Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 287,595, Jul. 28, 1981, Pat. No. 4,367,106. This application Aug. 30, 1982, Ser. No. 412,759

Int. Cl.³ B32B *31/06;* B65H *39/00*

U.S. Cl. 156—556 5 Claims



1. Apparatus for assembling a sandwich comprising a pair of bent glass sheets of matching configuration and a sheet of flexible interlayer material therebetween, said apparatus comprising:

an exit station for removing said pair of bent glass sheets from a glass sheet bending lehr while said glass sheets are still hot from bending,

an assembly station located a short distance from said exit station;

a conveyor for conveying said pair of bent glass sheets through said short distance having a minimum length slightly longer than the length of the longest of said glass sheets to be assembled and a maximum length such that said apparatus assembles said pair of bent glass sheets and said sheet of flexible interlayer material in a maximum of 35 seconds in order to deliver said pair of bent glass sheets

from said exit station to said assembly station at a temperature sufficient to make said interlayer tacky,

means for separating said pair of bent glass sheets from one another to provide a gap between said separated bent glass sheets while maintaining said bent glass sheets in alignment at said assembly station,

means for supporting said sheet of flexible interlayer material,

means for moving said supporting means into said assembly station to apply said sheet of flexible interlayer material against one of said bent glass sheets so as to form a subassembly therewith and to separate said supporting means from said subassembly,

means for removing said supporting means from said assembly station, and

means for positioning the other of said bent glass sheets to engage said sheet of flexible interlayer material,

said various means and said conveyor being constructed and arranged free from heating means and in such a manner that said conveyor means transfers said bent glass sheets from said exit station to said assembly station as a pair and said other means separate said glass sheets and bring the latter into engagement with said sheet of flexible interlayer material in a maximum of 35 seconds to enable the residual heat imparted to said bent glass sheets in said bending lehr to cause said sheet of flexible interlayer material to become tacky on engagement with said bent glass sheets at said assembly station without requiring any additional heat during the interval between the removal of said pair of bent glass sheets from said exit station and their assembly to said sheet of flexible interlayer material.

4,439,265

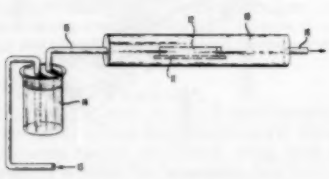
FABRICATION METHOD FOR $LINBO_3$ AND $LITAO_3$ INTEGRATED OPTICS DEVICES

Rodney C. Alferness, Holmdel; Lawrence L. Buhl, New Monmouth; Janet L. Jackel, Holmdel; Susan P. Lyman, Matawan, and Vellayan Ramaswamy, Lincroft, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 17, 1981, Ser. No. 284,472

Int. Cl.³ C30B *31/06*

U.S. Cl. 156—606 **4 Claims**



1. Method for manufacturing an optical device comprising an in-diffused strip lightguiding region in a substrate comprising material selected from the group consisting of $LiNbO_3$ and $LiTaO_3$, the method comprising

diffusing metal atoms into the substrate during a high-temperature diffusion step comprising heating the substrate to a temperature greater than about 700° C.,

characterized in that the method further comprises

contacting at least part of the substrate with an atmosphere comprising at least a minimum effective concentration of a hydrogen donor, the contact occurring during at least part of the time the substrate is, during the diffusion step, at the temperature greater than about 700° C., thereby preventing a substantial decrease of the Li concentrations in the contacted surface region of the substrate.

4,439,266

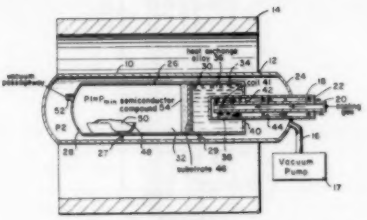
VAPOR TRANSPORT PROCESS FOR GROWING SELECTED COMPOUND SEMICONDUCTORS OF HIGH PURITY

Anthony L. Gentile, Thousand Oaks; John L. Bowers, Pacific Palisades, and Oscar M. Stafsudd, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 92,607, Nov. 8, 1979, Pat. No. 4,299,649, which is a continuation of Ser. No. 877,927, Feb. 15, 1978, abandoned, which is a continuation of Ser. No. 734,925, Oct. 22, 1976, abandoned. This application May 1, 1981, Ser. No. 259,384

Int. Cl.³ C30B *23/06*

U.S. Cl. 156—614 **2 Claims**



1. A process for growing II-VI semiconductor crystals which comprises:

(a) providing both a II-VI semiconductor source material and a crystal growth support member in a predetermined dynamic vacuum sufficient to create a predetermined overpressure at said source material and to remove impurities therefrom;

(b) raising the temperature of said support member to a predetermined level above the temperature of said source material, thereby preventing vapor transport between the two; and then

(c) lowering the temperature of said support member to a predetermined value below that of said source material to produce a dissociation of elemental gases from said source material and initiate controlled vapor transport of said elemental gases from said source material to said support member where said gases deposit in the formation of II-VI compound semiconductor crystals of high purity and stoichiometry.

4,439,267

VAPOR-PHASE METHOD FOR GROWING MERCURY CADMIUM TELLURIDE

David A. Jackson, Jr., Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,428

Int. Cl.³ C30B *25/12*

U.S. Cl. 156—614 **3 Claims**

1. A method of growing mercury cadmium telluride of the chemical notation $Hg_{(1-x)}Cd_xTe$, in a cold wall reactor, wherein x is greater than zero and less than 1, on a semiconductor substrate, including the steps of:

loading said substrate onto a susceptor;

loading mercury in a reservoir in said susceptor;

placing said suceptor and its load into a reactor;

purging said reactor;

differentially radio-frequency heating said susceptor to bring said substrate and said mercury to different predetermined temperatures whereby mercury vapor pervades said reactor and, as said temperatures are reached;

admitting alkyl gases to said reactor;

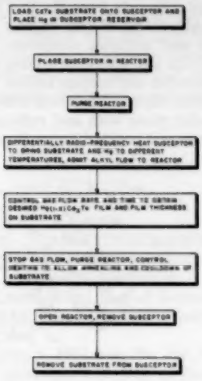
controlling the time and the flow rates of said gases, whereby said gases are thermally decomposed in the vicinity of said substrate and at least some of the decomposition products of the gases combine with the mercury

vapor to form mercury cadmium telluride on said substrate;

stopping the flow of gases, purging the reactor, and controlling the temperature of susceptor to allow annealing of the substrate and cooldown;

removing the susceptor and its load from the reactor, and;

removing the substrate from the susceptor.


LOAD CdTe SUBSTRATE ONTO SUSCEPTOR AND PLACE Hg IN DUSCEPTOR RESERVOIR
PLACE SUSCEPTOR IN REACTOR
PURGE REACTOR
DIFFERENTIALLY RADIO-FREQUENCY HEAT SUSCEPTOR TO BRING SUBSTRATE AND Hg TO DIFFERENT TEMPERATURES, ADMIT ALKYL FLOW TO REACTOR
CONTROL GAS FLOW RATE AND TIME TO OBTAIN DESIRED Hg(1-x)Cd(x)Te FILM AND FILM THICKNESS ON SUBSTRATE
STOP GAS FLOW, PURGE REACTOR, CONTROL HEATING TO ALLOW ANNEALING AND COOLDOWN OF SUBSTRATE
OPEN REACTOR, REMOVE SUSCEPTOR
REMOVE SUBSTRATE FROM SUSCEPTOR

4,439,268

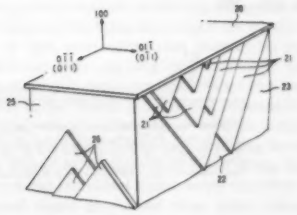
ORIENTATION OF INP SUBSTRATE WAFERS

Larry A. Coldren, Holmdel, and Lawrence W. Stulz, Shark River Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 6, 1983, Ser. No. 529,286

Int. Cl.³ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—626 **9 Claims**



1. A method of determining the orientation of a (100) InP substrate wafer, the method comprising the steps of

contacting at least a portion of the substrate wafer with a chemical etchant to expose a plurality of features having a predetermined shape on the portion of substrate wafer, and

designating a crystallographic direction on the substrate wafer in accordance with the orientation of the features on the portion of the substrate wafer, the method being characterized in that the portion of the substrate wafer includes at least one surface being substantially perpendicular to the (100) plane.

4,439,269

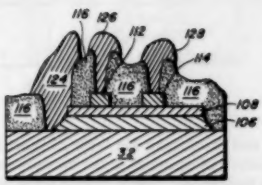
METHOD FOR MAKING JOSEPHSON JUNCTIONS WITH CONTAMINATION-FREE INTERFACES UTILIZING A ZNO CONTACT INSULATOR

Edward J. Cukauskas, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1982, Ser. No. 431,977

Int. Cl.³ H01L *39/24*

U.S. Cl. 156—643 **5 Claims**



1. A method of fabricating a Josephson junction integrated circuit device with contamination-free interfaces, comprising the steps of:

providing a quartz substrate located in an ultra-high vacuum chamber;

pumping said ultra-high vacuum chamber down to an ultra-high vacuum on the order of $1\text{–}5\times10^{-9}$ torr;

depositing by RF sputtering onto said quartz substrate a 300 nm lower layer of NbN, said lower layer being deposited at 600°–700° C. under a partial pressure of Ar on the order of 11×10^{-3} torr;

depositing by RF sputtering at 300° C. a 4 nm layer of hydrogenated silicon onto said lower layer of NbN;

oxidizing said layer of hydrogenated silicon in an oxygen atmosphere at 300° C.;

depositing by RF sputtering onto said hydrogenated silicon layer a 20–50 nm upper layer of NbN, said upper layer being deposited under a partial pressure of Ar in the range of $20\text{–}30\times10^{-3}$ torr, all said depositing and oxidizing steps being done in said ultra-high vacuum chamber during a single pump-down thereof;

sculpturing by anisotropic etching said deposited and oxidized layers to form base electrodes;

anisotropically etching through said upper layer and said oxidized silicon layer to form pedestals of counter electrodes and barriers;

depositing a 500 nm layer of ZnO over said device;

etching via holes through said ZnO layer to the base and counter electrodes;

depositing a 100 nm layer of a contact/lead superconducting material over said device, said contact/lead layer contacting said base and counter electrodes through said via holes in said ZnO layer; and

etching said contact/lead layer to form a contact and lead pattern.

4,439,270

PROCESS FOR THE CONTROLLED ETCHING OF TAPERED VIAS IN BOROSILICATE GLASS DIELECTRICS

Jimmie L. Powell, Wappingers Falls; Charles L. Standley, Hopewell Junction, both of N.Y., and John Sulerveld, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 8, 1983, Ser. No. 521,461

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—644 **6 Claims**

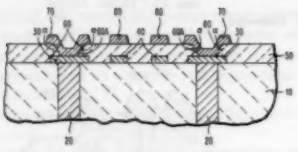
1. A process for etching openings in a relatively thick layer of borosilicate glass while controlling the degree of taper of the

side walls of the opening, the taper being in excess of about 45°, which process comprises:

depositing a layer of silicon nitride that contains silicon in an amount in excess of stoichoimetric in Si_3N_4,

densifying the silicon nitride layer,

depositing a layer of resist,



exposing and developing the layer of resist to define a desired pattern of openings in the borosilicate glass layer,

removing the exposed silicon nitride areas, and

subjecting the resultant exposed borosilicate glass surface to an etchant for the glass.

4,439,271

PROCESS FOR THE OXYGEN BLEACHING OF CELLULOSE PULP

Hans O. Samuelson, Gothenberg, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jun. 4, 1981, Ser. No. 270,438

Claims priority, application Sweden, Jun. 5, 1980, 8004184

Int. Cl.³ D21C *3/02, 9/00*

U.S. Cl. 162—19 **29 Claims**

1. A two stage process for the delignification of cellulose pulp, including chemical pulp prepared from the digestion of lignoscellulosic material, including an activation stage followed by an oxygen gas bleaching stage, the activation stage leading to a quick delignification in the oxygen gas bleaching stage, and also to a deactivation of the pulp in such a manner that degradation of the carbohydrates during the oxygen gas bleaching stage becomes slower, which comprises bringing the cellulose pulp in the activation stage in the presence of water in contact with a gas phase containing nitrogen dioxide and modifying the lignin content of the cellulose pulp to increase the rate of delignification in the oxygen gas bleaching stage by reaction with nitrogen dioxide over a reaction time within the range from about 5 seconds to about 30 minutes; adding oxygen gas to the activating reaction in an amount within the range from about 0.1 to about 5 moles per mole of NO_2 and in an amount within the range from about 0.6 to about 5 moles per mole of NO, nitrogen monoxide formed in the activation being utilized in the activation reaction; and then in the oxygen gas bleaching stage, subjecting the pulp to an oxygen gas bleaching in the presence of an alkaline-reacting neutralization medium or neutralizing agent, thereby obtaining an increased rate of delignification and a reduced degradation of the carbohydrates during the oxygen gas bleaching.

4,439,272

PULP MILL RESIDUAL LIQUOR RECOVERY PROCESS

Xuan T. Nguyen, 7375 Maynard, Montreal, Quebec, Canada

Filed Jan. 13, 1982, Ser. No. 339,114

Int. Cl.³ D21C *11/04*

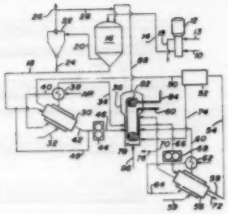
U.S. Cl. 162—30.11 **4 Claims**

1. A method for the recovery of chemical from residual liquor resulting from kraft pulping of cellulosic material which sequentially comprises:

(a) initially feeding all of the residual liquor to a first reaction zone and in the first reaction zone pyrolyzing the residual liquor to produce a reducing gas containing sulfur compounds and residual materials consisting of inorganic and organic components, with the proviso that said residual materials are in a solid or in a liquor of solid state,

(b) in a second reaction zone oxidizing in a fluidized bed provided therein with an internal heat extraction system said residual materials from the first reaction zone as to burn substantially all of said organic component and to accumulate said inorganic component as inorganic solids within said bed, said solids comprising at least a portion of sodium carbonate and sodium sulfate,

(c) thereafter in a third reaction zone reducing said inorganic solids in solid phase with said reducing gas of said first reaction zone said residual liquor from said first reaction



zone being sufficient to generate the amount of said reducing gas required for reducing in said third reaction zone said inorganic solids combined with said sulfur compounds and removing reduced inorganic solids comprising sodium carbonate and sodium sulfide from said third reaction zone,

(d) directing the spent reducing gas containing sulfur compounds from said third reaction zone into said second reaction zone to convert said sulfur compounds of said reducing gas into sulfur dioxide gas and combining said sulfur dioxide gas with said inorganic solids in step b, and thereby at least partly to convert said sodium carbonate into sodium sulfate.

4,439,273

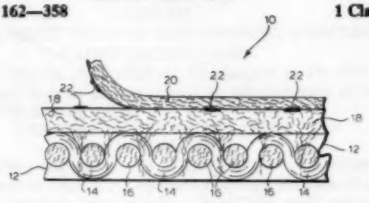
WET PRESS FELT FOR PAPERMAKING MACHINE

Thomas H. Curry, Clifton Park, N.Y., assignor to Albany International Corp., Albany, N.Y.

Continuation-in-part of Ser. No. 214,707, Dec. 10, 1980, abandoned. This application Aug. 11, 1982, Ser. No. 408,176

Int. Cl.³ D21F *7/08*

U.S. Cl. 162—358 **1 Claim**



1. In a wet press felt for use in a papermaking machine, which comprises an outer textile face layer for receiving and supporting a wet paper sheet during its passage through the nip of a wet press in the papermaking machine;

a lower backside layer for supporting the felt on the papermaking machine; and

an intermediate textile fabric layer between the outer textile face layer and the lower backside layer, the improvement, which comprises; said outer textile face layer being a sheet of spun-bonded, formed fabric comprising a substantially uniform layer of non-woven, synethetic organic filaments, said filaments being substantially round in cross-section and randomly distributed throughout the layer and so

disposed as to be substantially separate and independent of each other except at filament cross-over points, where the filaments are bonded together, said layer presenting a smooth, substantially unbroken surface which is porous, permitting only particles of less than about 35 microns in diameter to pass through, said face layer being secured to the intermediate layer by an adhesive disposed in disperse locations between the face layer and the intermediate layer so that porosity of the felt is not impaired.

4,439,274

METHOD AND CHIMNEY FOR REDUCING THE EMISSION OF SOLID PARTICLES

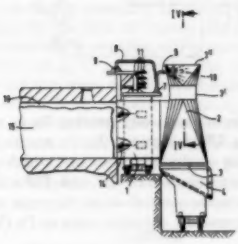
Walter Goossens, Wuerselen-Bardenberg, and Wolfgang Schrank, Alsdorf, both of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,784

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038519

Int. Cl.³ C10B *31/00*

U.S. Cl. 201—41 **8 Claims**



1. A method for reducing the emission of solid particles from a chimney forming a channel in which an air, gas, and solid particle mixture rises substantially vertically due to a heat convection current of given upward draft resulting from the discharge and collapse of a batch of hot coke from a horizontal coking chamber, comprising the following steps: avoiding any quenching of the hot coke being discharged for permitting the development of said heat convection current without any steam in said mixture, then exposing the substantially vertically rising mixture of hot air, gas and solid particles to a shower of scrubbing liquid drops which are directed substantially horizontally into the rising mixture again without causing any quenching of the coke being discharged, adjusting in combination the initial volume of the individual liquid drops, the initial surface tension of the individual liquid drops, the initial density of the individual liquid drops, and their initial substantially horizontal speed relative to each other so that the scrubbing liquid drops remain suspended in said given upward convection current draft for loading with solid particles until the loaded drops become too heavy for remaining suspended in the upward convection current draft and sink downwardly solely by gravity in countercurrent flow to the upward draft of the convection current, collecting the liquid drops laden with solid particles below said shower without contacting said hot coke for preventing substantially any steam generation to maintain said upward convection current draft undisturbed, and discharging the collected liquid without condensation from the chimney by preventing a direct contact between the loaded drops and the coke as the latter is being pressed out of the coking chamber.

4,439,275

COKE CALCINING APPARATUS

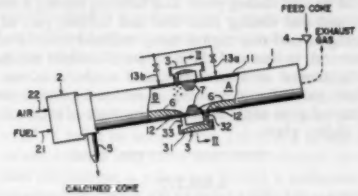
Kosaku Noguchi, Tokyo, Japan, assignor to Koa Oil Company, Limited, Chiyoda, Japan

Filed Dec. 9, 1982, Ser. No. 448,502

Claims priority, application Japan, Apr. 26, 1982, 57-69762

Int. Cl.³ C10B *1/10, 39/00, 39/12*

U.S. Cl. 202—100 **8 Claims**



1. A coke calcining apparatus comprising: a rotary kiln structure of the shape of a hollow cylinder the axis of which is declined relative to the horizontal, whereby coke introduced into the kiln structure at an upstream end thereof flows therethrough in the declination direction to the opposite downstream end thereof; an intermediate cooler extending along the outer wall surface of the kiln structure at an intermediate part thereof as considered in the longitudinal direction thereof and having inlet and outlet parts respectively communicating with upstream and downstream interiors of the kiln structure; and guide means for causing the entire quantity of coke which has flowed through the upstream interior to flow through the intermediate cooler, said coke being subjected to a first-stage heating in the upstream interior and then, after being cooled in the intermediate cooler, being subjected to a second-stage heating.

4,439,276

FILLING ARRANGEMENT FOR COKE OVEN CHAMBERS

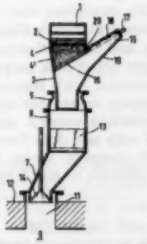
Manfred Galow, Essen, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH and Didier Engineering GmbH, both of Essen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 384,165

Claims priority, application Fed. Rep. of Germany, May 30, 1981, 3121587

Int. Cl.³ C10B *31/02, 31/04*

U.S. Cl. 202—239 **6 Claims**



1. An arrangement for filling at least one coke oven chamber having a filling opening, comprising

transport means arranged to transport coal;

a chute member arranged under said transport means to guide coal to a filling opening of a coke oven chamber;

at least one closing member arranged between said chute member and the filling opening of the coke oven chamber; and

closure means located in an upper portion of said chute

member and including a housing formed laterally on and of one piece with said chute member and a sliding plate movable in an upper portion of said chute member and closely under said transport means, into one region of said housing so as to assume an open position in which said sliding plate releases coal into said chute member and into another region of said housing so as to assume a closing position in which said sliding plate prevents coal from entering said chute member and only a small coal layer can lie on said sliding plate, said housing having a bottom part, and said sliding plate and said bottom part of said housing in said one region being inclined relative to the horizontal, so that said sliding plate is inclined relative to the horizontal at a predetermined angle, whereas said bottom part of said housing is inclined relative to the horizontal at an angle exceeding the angle of inclination of said sliding plate.

4,439,277

COKE-OVEN DOOR WITH Z-PROFILE SEALING FRAME

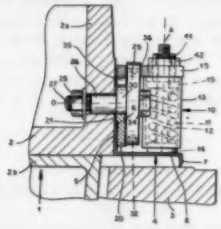
Kurt E. Dix, Auf dem Knust 25, 4630 Bochum, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,705

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1981, 3130587; Jun. 16, 1982, 3222553

Int. Cl.³ C10B *1/06, 25/06*

U.S. Cl. 202—248 **10 Claims**



1. In a coke-oven door wherein a sealing frame of generally Z-shaped cross-section extends around the door body and has an inner rim hugging the peripheral door surface, said sealing frame further having a cantilevered web integral with said rim terminating in a free edge confronting a face of a door frame of an associated coking chamber,

the improvement wherein said door is provided with clamping means partly overlying said rim and holding same against said peripheral door surface while being shiftable along the latter, and a multiplicity of retaining disks individually rotatable about axes perpendicular to said door surface and provided with frame-shifting cams bearing upon said clamping means for adjustably backstopping same against pressure exerted upon said free edge by contact thereof with said door frame, said rim being coupled with said clamping means for local entrainment thereby under pressure of said frame-shifting cams.

4,439,278

PROCESS INHIBITOR FOR READILY POLYMERIZABLE ETHYLENICALLY UNSATURATED AROMATIC COMPOUNDS

Ted L. Douglas; Ambrose J. Clonce, and Glenn C. Jones, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 390,489, Jun. 21, 1982, Pat. No. 4,389,285. This application Apr. 28, 1983, Ser. No. 489,678

Int. Cl.³ C07C *7/20*; B01D *3/34*

U.S. Cl. 203—9 **8 Claims**

7. In a process for the preparation of styrene which includes a distillation step at elevated temperature and/or reduced pressure, the improvement which comprises providing a substance selected from methyl-3,5-dinitrosalicylate, phenyl-3,5-dinitrosalicylate, 3,5-dinitro-4-hydroxybenzoic acid, and mixtures thereof to the distilland in a concentration of about 250 to 2,000 ppm.

4,439,279

METHOD FOR ELECTROCHEMICAL OXIDIZING TO THE PU (VI)

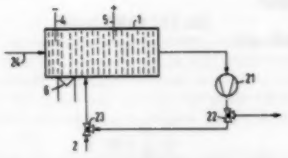
Fritz Herrmann, Hanau, and Christian Ost, Mainaschaff, both of Fed. Rep. of Germany, assignors to Alkem GmbH, Hanau, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,543

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929122

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—1.5 **8 Claims**



1. Method for electrochemically treating Pu in nitric acid solutions containing U^6 to increase the Pu to the six-valent state without forming quadri-valent uranium which comprises circulating a starting solution of U^6 and Pu^4-nitrates and HNO_3 through an electrolysis cell at an electrode voltage of about 3 volts to increase the oxidation state to Pu (VI).

4,439,280

PHENOTHIAZINE LEUCODYES FOR ELECTROCHROMIC RECORDING

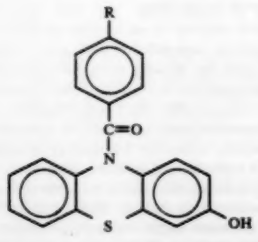
Paul L. Gendler, and Robert J. Twieg, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,478

Int. Cl.³ B21H *1/20*; B41C *3/08*

U.S. Cl. 204—2 **8 Claims**

1. A substrate for electrochromic recording comprising bromide ions and characterized by also comprising a leucodye having the structure



wherein R is lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino, or diarylamino.

4,439,281

PROCESS FOR PRODUCING A STABLE CONNECTION BETWEEN AN ELECTRODE STRUCTURE MADE FROM A METALLIZED BODY OF A FIBROUS NATURE AND A CURRENT LEAD OUT TAB

Claus Schneider, Feilbach, and Gabor Benczur-Ürmössy, Stuttgart, both of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft, Mettingen, Fed. Rep. of Germany

Filed Oct. 21, 1982, Ser. No. 435,700

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1981, 3142091

Int. Cl.³ H01M *10/44*

U.S. Cl. 204—2.1 14 Claims

1. A process for producing a stable connection between an electrode structure, made from a metallized body of a fibrous nature, and a current lead-out tab, comprising reinforcing one edge of the electrode structure by means of an electrodeposited metal coating and attaching the current lead-out tab to this edge.

4,439,282

TREATMENT OF METALS TO ENHANCE ADHESIVE BONDING

Norman R. Byrd, Villa Park, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 1, 1982, Ser. No. 383,504

Int. Cl.³ C25D *5/00, 5/44;* C23F *7/06*

U.S. Cl. 204—38 R 25 Claims

1. In a process for enhancing adhesive bonding of an aluminum substrate by the steps of treating said substrate to increase the surface area and to roughen said surface, and then applying an adhesive coating to said surface, the improvement which comprises the step prior to adhesive bonding, of treating said substrate with a basic solution containing a complex ion of copper, to cause said substrate metal to become oxidized and go into solution as an ion, and the copper ion of said solution to deposit on said substrate in a complex form, and to form a copper salt with said aluminum substrate.

4,439,283

ZINC COBALT ALLOY PLATING

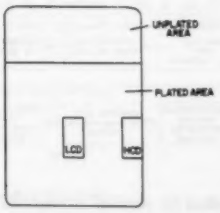
Wim J. C. Verberne, and John S. Hadley, both of 's-Hertogenbosch, Netherlands, assignors to OMI International Corporation, Warren, Mich.

Filed Jan. 27, 1983, Ser. No. 461,358

Claims priority, application United Kingdom, Jan. 29, 1982, 8202581; Jan. 29, 1982, 8202580; Jun. 2, 1982, 8216049; Nov. 22, 1982, 8233238

Int. Cl.³ C25D *3/56, 5/10, 5/48*

U.S. Cl. 204—38 R 24 Claims



1. An aqueous acidic electroplating bath for producing zinc-cobalt electrodeposits which comprises: as Ingredient A, zinc ions; as ingredient B, cobalt ions; as ingredient C, chloride ions; as ingredient E, benzoic acid, salicylic acid or nicotinic acid and the bath compatible alkali metal and ammonium salts thereof; as ingredient F, benzylidene acetone; as ingredient G, a compound selected from the group consisting of N-allyl thiourea and a compound having the formula:

wherein:

R^1 represents an alkyl group having 1 to Y carbon atoms or an alkyl group having from 1 to Y carbon atoms at least one of which is substituted by a hydroxyl group; and

R^2 and R^3 or both represent a hydrogen atom or an alkyl group of 1 to Y carbon atoms or an alkyl group of 1 to Y carbon atoms at least one of which is substituted by a hydroxyl group or an amino group and R^2 and R^3 may be the same or different and may be the same as or different to R^1, Y being an integer from 2 to 6; and as ingredient H, an ethoxylated long chain acetylenic alcohol; an ethoxylated alkylamine; a polyether having a molecular weight ranging from about 100 to about 1,000,000; a polyalkylene glycol; a polyglycidol; an ethoxylated phenol; an ethoxylated naphthol; an ethoxylated olefin glycol; an ethoxylated acetylenic glycol and mixtures thereof; the bath containing ingredients A, B, and C and at least one of ingredients E, F, G and H.

17. A process for producing a semi-bright to bright zinc cobalt electrodeposit on a conductive substrate which comprises the steps of immersing a substrate in the bath as defined in claim 1, cathodically electrifying the substrate and passing current between an anode and the substrate for a period of time sufficient to deposit the desired thickness of a zinc cobalt electrodeposit thereon.

21. The process as defined in claim 17 including the further steps of extracting the substrate having the zinc cobalt electrodeposit thereon from the bath, and thereafter applying a passivate coating on the zinc-cobalt electrodeposit.

4,439,284

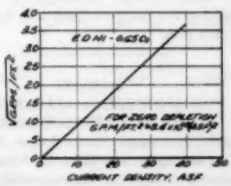
COMPOSITION CONTROL OF ELECTRODEPOSITED NICKEL-COBALT ALLOYS

Robert J. Walter, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 17, 1980, Ser. No. 160,336

Int. Cl.³ C25D *3/56*

U.S. Cl. 204—43 T 5 Claims



1. A process for controlling the composition of electrodeposited nickel-cobalt, EDNi-Co, comprises the steps of:

immersing an anode comprising at least one non-reactive basket containing nickel, and at least one non-reactive basket containing cobalt, and a cathodic substrate into an electrolyte having a predetermined Ni^{++}/Co^{++} ratio;

controlling said predetermined electrolyte Ni^{++}/Co^{++} ratio constant by passing a current from said nickel anode to said cathodic substrate through a first power source or rectifier and by passing a current from said cobalt anode to said cathodic substrate through a second power source or rectifier: and

agitating the electrolyte in the vicinity of said cathodic substrate above the cathodic starvation agitation level.

4,439,285

TRIVALENT CHROMIUM ELECTROLYTE AND PROCESS EMPLOYING NEODYMIUM REDUCING AGENT

Thaddeus W. Tomaszewski, Dearborn, Mich., assignor to OMI International Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 205,406, Nov. 10, 1980, Pat. No. 4,392,922. This application May 12, 1983, Ser. No. 492,304

Int. Cl.³ C25D 3/06

U.S. Cl. 204—51 20 Claims

1. An aqueous acidic trivalent chromium electrolyte containing trivalent chromium ions, a complexing agent for maintaining the trivalent chromium ions in solution, halide ions, ammonium ions, hydrogen ions to provide a pH on the acid side, and a reducing agent comprising neodymium ions present in an amount effective to maintain the concentration of hexavalent chromium ions at a level at which satisfactory chromium electrodeposits are obtained.

4,439,286

ELECTROLYTE FOR THE DEPOSITION OF BRIGHT TIN COATINGS

Ivan V. Todorov; Vera V. Mircheva; Stefan R. Stefanov, and Ivan M. Todorov, all of Sofia, Bulgaria, assignors to Edinen Centar Po Chimia, Sofia, Bulgaria

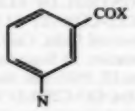
Filed Jul. 14, 1982, Ser. No. 398,365

Claims priority, application Bulgaria, Jul. 14, 1981, 52924

Int. Cl.³ C25D 3/32

U.S. Cl. 204—54 R 1 Claim

1. Electrolyte for the deposition of bright tin coatings, which is composed of sulphuric acid in a concentration from 100 to 180 g/l; tin sulphate in a concentration from 20 to 60 g/l; formalin in a concentration of about 4 ml/l, benzalacetone in a concentration 0.2 to 0.8 g/l and surfactant of a general formula $C_nH_{2n}YO(CH_2CH_2O)_mX$ where Y is hydrogen or aryl, X is H, SO_2H or SO_3H, n is a number from 8 to 18, m is a number from 4 to 25, in a concentration from 3 to 15 g/l, comprising in that said electrolyte includes also a derivative of the nicotinic acid of the general formula



where X is —OH, —NH_2, —$O(CH_2CH_2O)_qH$, —$NH(CH_2CH_2O)_pH$, and q, p are integers from 1 to 4, in a concentration from 0.05 to 0.8 g/l.

4,439,287

METHOD FOR ANODIZING ALUMINUM MATERIALS AND ALUMINIZED PARTS

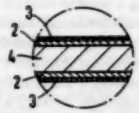
Siegfried Birkle, Hochstadt; Klaus Stoger, Nuremberg, both of Fed. Rep. of Germany, and Hans De Vries, Heerde, Netherlands, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 480,072

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211759

Int. Cl.³ C25D 11/08

U.S. Cl. 204—58 8 Claims



1. A method for oxidatively anodizing aluminum or aluminized parts comprising performing the oxidative anodization of said parts in an aqueous alkaline, anodizing electrolyte containing 10 to 200 g trisodium phosphate or tripotassium phosphate, at temperatures of 0° to 15° C., while conducting carbon dioxide free or low content carbon dioxide air through the solution, to produce an outer aluminum oxide layer more than about 4 microns thick on said parts, said outer aluminum oxide layer being dull rather than shiny and being free of a forming layer generated by the reaction of aluminum oxide and carbonate anion, said forming layer being able to limit the thickness of an aluminum oxide layer generated by anodic oxidation.

4,439,288

PROCESS FOR REDUCING ZN CONSUMPTION IN ZINC ELECTROLYTE PURIFICATION

James E. Hoffmann, Houston, Tex., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jul. 11, 1983, Ser. No. 512,453

Int. Cl.³ C23B 5/10; C25B 11/03

U.S. Cl. 204—114 8 Claims

1. In the purification of neutral leach filtrates containing oxidants for the electrowinning of zinc, the improvement comprising:

treating the neutral leach filtrate with a reducing agent selected from $ZnSO_3$, SO_2 or mixtures thereof in amounts sufficient to substantially reduce all the oxidant present in the neutral leach filtrate and to provide a treated zinc leachate having a predetermined pH.

4,439,289

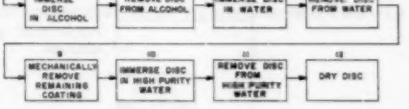
PROCESS FOR REMOVAL OF MAGNETIC COATINGS FROM COMPUTER MEMORY DISCS

Gaetano T. Viglione, Amesbury, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jul. 6, 1981, Ser. No. 280,738

Int. Cl.³ C25F 5/00; C23G 1/02; B29C 17/08; C09K 13/04

U.S. Cl. 204—146 18 Claims



7. A method for removal of magnetic coatings, including a binder and metal oxide, from computer memory discs, comprising the steps of:

providing an acid solution which does not readily react with aluminum yet will cause disassociation of the binder from the disc substrate, said acid solution comprising sulfuric acid and a wetting agent;

immersing the discs in said solution;

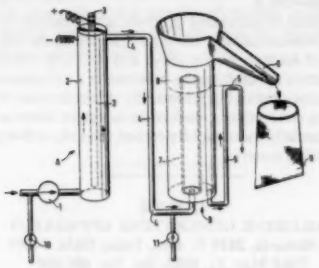
generating an electrical potential in said acid solution; and

applying ultrasonic energy.

4,439,290
PROCESS FOR THE SEPARATION OF OIL-IN-WATER EMULSIONS BY ELECTROLYSIS

Hans-Rudolf Marfurt, and August Zürer, both of Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 28, 1981, Ser. No. 267,310
Claims priority, application Switzerland, Jun. 4, 1980, 4333/80
Int. Cl.³ C02F 1/46
U.S. Cl. 204—149 14 Claims



1. A process for the continuous separation on an oil-in-water emulsion, comprising the steps of adding a coagulating agent thereto, electrolyzing said emulsion at a pH value of 5 to 10, under a potential of at least 1.5 volts to form discrete oil particles, floating these oil particles with the aid of hydrogen gas formed simultaneously at the cathode, separating off the oil phase thus formed, and adding a flocculating agent to condense the oil phase.

4,439,291
ACRYLATE-CONTAINING COMPOSITIONS AND THEIR POLYMERIZATION

Edward Irving, Burwell, and George E. Green, Stapleford, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

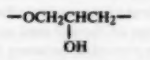
Continuation of Ser. No. 214,920, Dec. 10, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 400,784
Claims priority, application United Kingdom, Dec. 22, 1979, 7944319; Apr. 22, 1980, 8013262
Int. Cl.³ C08F 2/50; C08G 75/04
U.S. Cl. 204—159.23 14 Claims

1. A polymerizable composition comprising

(a) a compound containing in the molecule both

(i) at least one group chosen from acryloyloxy and methacryloyloxy groups,

said acryloyloxy or methacryloyloxy group in compound (a) being attached to a carbon atom of an aromatic nucleus, directly or through the (terminal) ether oxygen atom of a group of formula



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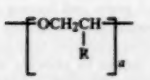
or



II

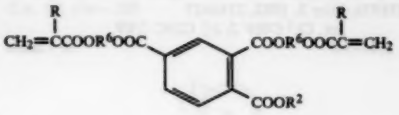
where

R denotes a hydrogen atom or a methyl group and

a is an integer of from 1 to 6, and

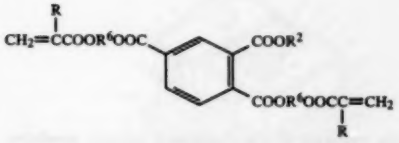
(ii) at least one group chosen from allyl, methallyl, and 1-propenyl groups, which allyl, methallyl or 1-propenyl group is attached directly to a carbon atom which forms part of an aromatic nucleus, to an oxygen atom or to an oxycarbonyl group which oxygen or oxycarbonyl is in turn directly attached to such a carbon atom,

the total of the said groups (i) and (ii) being at least three, or in which compound (a) is of the formula



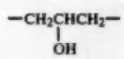
XVI

or



XVII

where each R^6 denotes a group of formula



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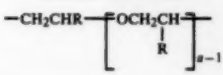
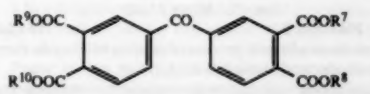


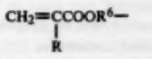
wherein R denotes a hydrogen atom or a methyl group and a is an integer of from 1 to 6, and

each R^2 denotes an allyl, methallyl, or 1-propenyl group, or in which compound (a) is of the formula



XIX

where one of R^7 and R^8, and one of R^9 and R^{10}, have the same meaning and each denotes an allyl or methallyl group, and each of the remaining symbols of R^7 and R^8, and R^9 and R^{10}, represent a group of formula



XX

where R and R^6 are defined as above, and

(b) a compound containing, per molecule, at least two mercaptan groups directly attached to aliphatic carbon atoms, in a proportion such as to supply at least 0.8 such mercaptan group per group selected from allyl, methallyl, and 1-propenyl groups in (a) but less than 1.0 such mercaptan group per group selected from acryloyl, methacryloyl, allyl, methallyl, and 1-propenyl groups in (a).

4,439,292

TREATMENT OF PERFLUORINATED POLYMER MEMBRANES CONTAINING CARBOXYL GROUPS

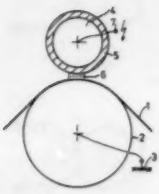
Helmut Klotz, Bergisch-Gladbach, and Hans G. Fitzky, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 26, 1982, Ser. No. 401,757

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1981, 3131978; May 3, 1982, 3216417

Int. Cl.³ C08F 2/54; C25C 7/09

U.S. Cl. 204—165 10 Claims



1. In the treatment of a perfluorinated polymer membrane containing acid ion exchanger groups in a corona discharge, the improvement which comprises employing a membrane containing carboxyl groups and maintaining the membrane at a temperature below about 80° C. during the discharge treatment.

4,439,293

ELECTRODIALYTIC PURIFICATION PROCESS

Daniel J. Vaughan, 36 Paxon Dr., Wilmington, Del. 19803

Continuation-in-part of Ser. No. 241,520, Mar. 9, 1981, Pat. No. 4,325,792. This application Feb. 19, 1982, Ser. No. 350,415

The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.

Int. Cl.³ B01D 57/02

U.S. Cl. 204—180 P 17 Claims

1. In an electrodialysis process of passing an electric current through an electrodialysis cell comprising

(a) a catholytic compartment containing a cathode and a catholyte,

(b) an anolyte compartment containing an anode and an anolyte comprising an acidic aqueous solution containing dissolved multivalent metal cations and selected from (1) aqueous electroplating-type acids, (2) aqueous salt of a cation and an anion containing a multivalent metal ion, (3) aqueous salt of a multivalent metal cation and an anion of an acid containing sulfur, phosphorus, halogen or carbon, and (4) mixtures thereof,

(c) the anolyte and catholyte compartments being separated by a cation-permeable membrane,

the improvement comprising employing as the catholyte an aqueous solution of an inorganic carbonate, bicarbonate or hydroxide or mixtures thereof which form carbon dioxide and/or water upon contact with said acidic anolyte, whereby the electrodialysis can be carried out at high efficiency and high capacity without adversely affecting the capacity of the electrodialysis cell by precipitation of salts in the separating membrane and the quality of the anolyte by reverse migration of anions from the catholyte to the anolyte.

4,439,294

REACTIVE ION ETCHING OF SOFT-MAGNETIC SUBSTRATES

Thijs W. Bril, Sunnyvale, Calif., and Willibrordus G. M. van den Hoek, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1983, Ser. No. 463,202

Claims priority, application Netherlands, Feb. 12, 1982, 8200532

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 E 7 Claims

1. A method of providing grooves in a substrate of a soft-magnetic, iron-containing material selected from the group consisting of ferrites, Ni-Fe alloys and Al-Fe-Si alloys, comprising reactive ion etching the substrate in a chlorine-containing or bromine-containing plasma, the substrate areas not to be etched being covered by a mask of an inorganic material which is not substantially more rapidly etched than the soft-magnetic, iron-containing material.

4,439,295

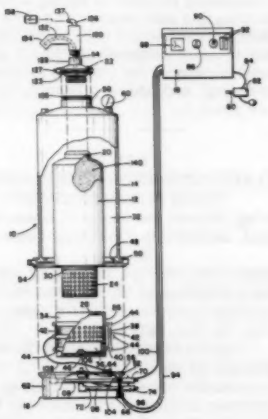
CHLORINE GENERATING APPARATUS

Joseph M. Richards, 2819 E. 49th, Tulsa, Okla. 74105

Filed Mar. 31, 1983, Ser. No. 480,880

Int. Cl.³ C25B 15/02, 15/08, 9/00, 1/26

U.S. Cl. 204—229 8 Claims



1. A chlorine generating apparatus for chlorination of a body of water, the chlorine generating apparatus comprising a pair of concentrically arranged inner and outer tanks having concentrically arranged ports providing independent access to the interior of each tank, the inner tank being a salt tank, anode chamber means, disposed below said salt tank and in communication therewith, perforated means providing said communication between the interior of the salt tank and the anode chamber means, an annulus provided between the anode chamber means and outer tanks forming a cathode chamber, gas trap assembly means removably engagable simultaneously with the concentrically arranged ports and having the interior thereof independently in communication with the interior of the salt tank and cathode chamber, chlorine tube means extending into the gas trap assembly means to provide said communication between the interior of the salt tank and the interior of the gas trap assembly means whereby chlorine evolved in the anode chamber is discharged into the gas trap assembly, fluid inlet means provided for admitting water from the body of water into the cathode chamber for movement upwardly therethrough and into the interior of the gas trap assembly means whereby the chlorine discharged into the gas trap assembly means is mixed with the water, and water discharge means

provided for the gas trap assembly means for discharge of the chlorine water mixture therefrom for return to the body of water.

2. A chlorine generating apparatus as set forth in claim 1 and including remote power supply means operably connected with the anode chamber means and cathode chamber for activation thereof to produce chlorine in the anode chamber.

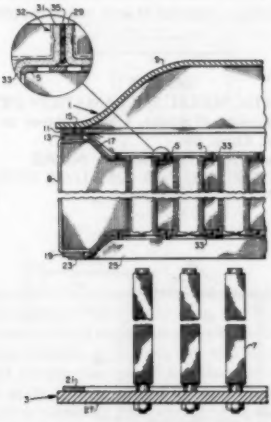
3. A chlorine generating apparatus as set forth in claim 2 and including pressure switch means operably connected between the power supply means and the interior of at least one of the tanks for controlling the supply of electric current to the power supply means in accordance with the internal pressure conditions of the said one tank.

4,439,296

METHOD FOR REPAIRING PERFLUORINATED POLYMERIC MICROPOROUS ELECTROLYTIC CELL SEPARATORS BY HEAT SEALING

Rajeshwar Swarup, Williamsville, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,198
Int. Cl.³ C25B *9/00, 13/02, 13/08;* **H01M** *2/16*
U.S. Cl. 204—253 **4 Claims**



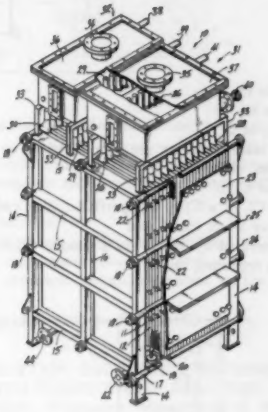
1. A method for repairing electrolytic cell separator panels, said electrolytic cell comprising a plurality of anodes and cathodes in alternating arrangement separated by a PTFE microporous separator into anolyte and catholyte compartments, said separator being formed by joining and heat sealing together a multiplicity of separator panels encasing the anodes or the cathodes and being fastened to the cell structure by means of a flange at an end thereof, the method comprising (a) removing only defective or damaged panel(s) of the separator by breaking their heat seals, and (b) installing replacement panel(s) by joining the same to the edge(s) of the broken heat seals of the remaining non-defective/damaged panels of the separator to form new panel joints, said panels being affixed together by means of a PTFE sealant strip located between the panel joints and sealed by the application of heat and pressure.

4,439,297

MONOPOLAR MEMBRANE ELECTROLYTIC CELL

Morton S. Kircher, Clearwater, Fla.; David D. Justice, Cleveland, Tenn.; Kenneth E. Woodard, Jr., Cleveland, Tenn., and Charles H. Harrison, Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 1, 1981, Ser. No. 307,352
Int. Cl.³ C25B *9/00, 11/03, 11/06, 13/08*
U.S. Cl. 204—257 **9 Claims**

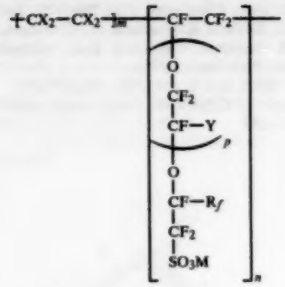


1. A monopolar membrane electrolytic cell which comprises:

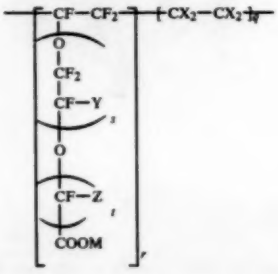
(a) a plurality of anodes wherein each anode is comprised of a first foraminous surface and a second foraminous surface positioned in parallel and spaced apart, and a frame enclosing said first and said second foraminous surfaces, said frame having two side members, a top member, and a bottom member attached to said foraminous surfaces, a chamber formed between said foraminous surfaces and bounded by said frame, conductor rods passing through one of said side members of said frame into said chamber, said conductor rods being spaced apart from said foraminous surfaces, foraminous conductive connectors positioned in said chamber and attached to said conductor rods and to said foraminous surfaces;

(b) a plurality of cathodes wherein each said cathode is comprised of at least one foraminous surface having a catalytic coating of a Beta phase Raney nickel-molybdenum alloy, and a frame enclosing said foraminous surface, said cathodes being alternatingly interleaved with said anodes;

(c) a plurality of sheets of cation exchange membrane material, each of said sheets being pressed between each opposite pair of said anodes and said cathodes, said sheets being in direct contact with said anodes, said cation exchange membrane material being comprised of a blend of 10 to 90 percent by weight of a first fluorinated polymer which has repeating units



where
m is 3 to 15,
n is 1 to 10,
p is 0, 1, or 2,
the X's taken together are four fluorines or three fluorines and one chlorine,
Y is F or CF_3,
R_f is F, Cl, or a C_1 to C_{10} perfluoroalkyl radical, and
M is H or alkali metal, and
90 to 10 percent by weight of a second fluorinated polymer which has repeating units



where
q is 3 to 15,
r is 1 to 10,
s is 0, 1, or 2,
t is 2,
the X's taken together are four fluorines or three fluorines and one chlorine,
Y is F or CF_3,
Z is F or CF_3, and
M is H or alkali metal;

(d) raw material supply conduits and product withdrawal conduits communicating with the interior of each of said anodes and said cathodes;

(e) means for supplying electric current to said anodes and removing electric current from said cathodes; and

(f) pressing means for pressing said anodes and said cathodes together to form a substantially fluid-tight cell.

4,439,298

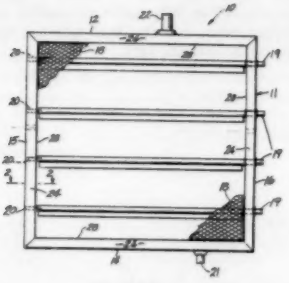
COMPOSITE FIBER REINFORCED PLASTIC FRAME

James M. Ford; Robert A. Dean; Kenneth E. Woodard, Jr., all of Cleveland, Tenn., and Antonio Branco, Prospect, Ky., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 26, 1982, Ser. No. 402,200
Int. Cl.³ C25B *9/04, 11/03, 11/00*
U.S. Cl. 204—258 **24 Claims**

1. A composite fiber reinforced plastic frame for use with a pair of opposing electrode surfaces, comprising in combination:

a. generally parallel top and bottom members of predetermined length interconnected by opposing, generally parallel, vertically positioned first and second side members of predetermined length at a plurality of junctions to form a generally rectangularly shaped frame structure, the top and bottom members and the first and second side members further being generally rectangular in cross section



with four faces to form a hollow center section into which the opposing electrode surfaces fit;

b. thermoplastic corrosion resistant liner material covering three of the four faces having an inner surface and an outer surface;

c. a core material filling the generally rectangular cross section within the liner material; and

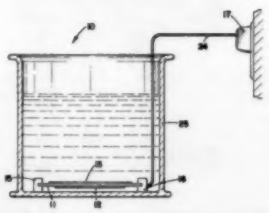
d. reinforcing means inserted in the core material at predetermined locations adjacent at least one of the plurality of junctions.

4,439,299

ELECTROLYTIC METAL RECLAMATION DEVICE

Kenneth R. Houseman, Westlake, Ohio, assignor to General Dental, Inc., St. Louis, Mo.

Filed Dec. 1, 1982, Ser. No. 445,965
Int. Cl.³ C25C *1/20, 7/00;* **C25B** *11/10, 11/12*
U.S. Cl. 204—271 **5 Claims**



1. In combination, a container for an aqueous bath generating metal ions and a device immersed in said container and positioned flat on the bottom thereof for recovering metal by electrolytic deposition from said aqueous bath, said device comprising:

a direct current source;

a non-conductive flat structural base plate;

a positively charged electrical polar means formed on one face of said base plate and operatively connected to said direct current source;

a negatively charged electrical polar means formed on the other face of said base plate and operatively connected to said direct current source;

a flat planar anodic surface layer comprising a flexible plastic

material containing conductive particles formed on said one face of said base plate overlying and contacting said positively charged polar means for charging said anodic surface layer positively;

a flat planar cathodic surface layer comprising a flexible plastic material containing conductive particles formed on said other face of said base plate overlying and contacting said negatively charged polar means for charging said cathodic surface layer negatively;

means for supporting said base plate in said aqueous bath lying flat on the bottom of said container with said anodic and cathodic surface layers exposed in their entirety to said aqueous bath;

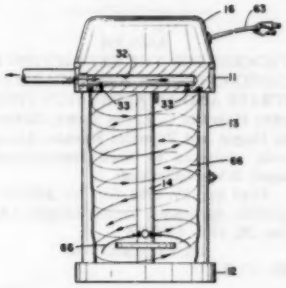
whereby to cause metal from said metal-ion-containing aqueous bath to be plated onto said cathodic surface layer.

4,439,300

VORTEX TYPE METAL COLLECTOR

Kenneth R. Houseman, Westlake, Ohio, assignor to General Dental, Inc., St. Louis, Mo.

Filed Apr. 1, 1983, Ser. No. 481,469
Int. Cl.³ C25C *7/00, 1/20*
U.S. Cl. 204—272 **8 Claims**



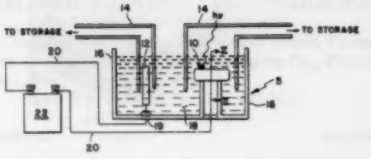
1. Apparatus for collecting ionized metal from a liquid solution comprising a fluidtight housing, the housing including a cylindrical shell and opposed end walls enclosing a cylindrical collection chamber, at least one end wall removeable from said shell and closing one end of the chamber, means forming a cathode at the interior wall of the shell chamber, an anode in the chamber extending generally along its axis, terminal means associated with each of the cathode and anode for establishing electrical current therebetween through the liquid in the chamber, an inlet for admitting fluid into the chamber adjacent one of its ends including nozzles, the anode being hollow for a major portion of its length, said anode including intake means adjacent one of its ends adjacent an end of the chamber opposite said one end, said anode including means for releasably securing said releasable end wall in assembled relation to said shell, said inlet including a bore in the associated end wall in a plane generally transverse to the axis of the chamber, a plurality of slots each extending through an inner face of the associated end wall and communicating with said bore, said slots each being elongated in a direction tangent to a circle concentric with the axis of the chamber whereby solution discharged into said chamber through said inlet slots is induced to flow in spiral currents towards said anode intake means.

4,439,301

PHOTOELECTROCHEMICAL CELLS INCLUDING CHALCOGENOPHOSPHATE PHOTOELECTRODES

Benjamin Reichman, Birmingham, Mich., and Charles E. Byvik, Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 7, 1982, Ser. No. 433,196
Int. Cl.³ C25B *1/02*; H01M *6/36*
U.S. Cl. 204—278 **6 Claims**



1. In a device for converting photo energy into another form of energy:

a photoelectrode made from a layered transition metal chalcogenophosphate (MPX_3) selected from $SnPS_3$, $FePS_3$ and $NiPS_3$;

a counter electrode;

an acidic electrolyte solution surrounding said photoelectrode and said counter electrode; and

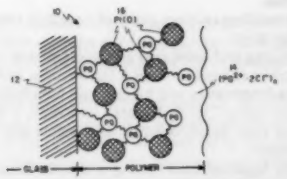
an external electrical circuit connected to the two electrodes.

4,439,302

REDOX MEDIATION AND HYDROGEN-GENERATION WITH BIPYRIDINIUM REAGENTS

Mark S. Wrighton, Winchester, Mass.; Dana C. Bookbinder, East Greenwich, R.I.; James A. Bruce, Somerville, Mass.; Raymond N. Dominey, Pensacola, Fla., and Nathan S. Lewis, Palo Alto, Calif., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 24, 1981, Ser. No. 324,496
Int. Cl.³ C25F *7/00*
U.S. Cl. 204—290 R **14 Claims**



1. An apparatus for redox mediation comprising:

(a) a substrate;

(b) a substrate bound reagent comprising molecules having a redox-active bipyridinium center and binding groups which permit substrate-binding and cross-linking; and

(c) at least one noble metal catalyst dispersed within the substrate-bound reagent.

4,439,303

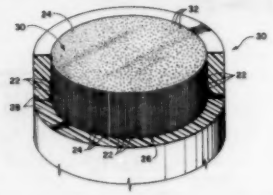
CRYSTALLOGRAPHICALLY-ORIENTED SPATIALLY-DISPERSED CONDUCTIVE FIBER ELECTRODE

Maurice Cocchi, 4007 W. 27th Ave., Denver, Colo. 80212

Filed Jan. 28, 1982, Ser. No. 393,128
Int. Cl.³ G01N *27/26*; B01K *3/04*
U.S. Cl. 204—434 **12 Claims**

1. An electrode for electrochemical stripping analysis, com-

prising a core of a plurality of generally uniformly oriented and laterally spatially displaced electrically conductive fibers having a crystallographic structure of conducting planes of greatest electrical conductivity extending parallel to the longitudinal dimension of the fiber, an electrically insulating bonding material connected to and substantially completely filling the lateral spaces throughout the core between the laterally spatially displaced fibers and bonding the fibers into the core,



an electrode face extending generally transversely with respect to and intersecting the ends of the fibers to maximumly expose the ends of the conducting planes for electron flow at the electrode face, and

an electrical conductor directly electrically connected to each fiber at the other end of each fiber opposite of the electrode face, each fiber extending continuously between its ends at the electrode face and at the electrical conductor.

4,439,304

PROCESS FOR BENEFICIATING HIGH SULFUR, HIGH FLUIDITY COAL

John D. Sudbury, and Clyde W. Zielke, both of McMurray, Pa., assignors to Conoco Inc., Wilmington, Del.

Filed Jul. 9, 1982, Ser. No. 396,978

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE **17 Claims**

1. A method of forming a liquefied coal product having a lower sulfur percent by weight than the high sulfur solid coal feed from which it is derived consisting essentially of the sequence of steps as follows:

(a) providing solid coal having at least two percent by weight sulfur and a particle size less than about 14 Tyler mesh,

(b) providing calcium oxide of a particle size less than about 40 Tyler mesh,

(c) mixing said solid coal and said calcium oxide with liquefaction solvent to form a liquefaction mixture,

(d) hydrogenating and heating said liquefaction mixture to at least about 750° F. forming a mixture of low sulfur liquefied coal liquid, residual coal solids and calcium sulfide solids.

said liquefied coal having a liquefied coal sulfur percent by weight which is substantially less than said two percent by weight sulfur of said solid coal, whereby a substantial proportion of said sulfur of said coal reacts with said calcium oxide to form said calcium sulfide,

(e) filtering said liquefied coal from said residual solids and said calcium sulfide solids to separate a low sulfur liquefied coal liquid product.

4,439,305

PROCESS FOR PYROLYSIS OF CARBONOUS MATERIALS

Richard P. Rhodes, Westfield, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 220,684, Dec. 20, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 401,002

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—10 **24 Claims**

1. A method for converting a carbonous material selected from the group consisting of subbituminous coal, oil-shale, lignite, and peat, to liquid and gaseous products, the method consisting essentially of:

(a) impregnating the carbonous material with one or more soluble iron salts;

(b) treating the impregnated carbonous material in such a way as to precipitate, into the structure of the carbonous material, said metal as its oxide or in a form which can be readily converted to its oxide under the pyrolysis conditions of step (c) below; and

(c) pyrolyzing the treated carbonous material at a temperature from about 400° C. to about 700° C., at gas residence times of less than about 30 seconds and solids residence times from about 5 to 100 minutes, wherein a reducing gas consisting essentially of hydrogen is introduced during pyrolysis.

13. A method for converting a carbonous material selected from the group consisting of subbituminous coal, oil-shale, lignite, and peat, to liquid and gaseous products, the method comprising:

(a) impregnating the carbonous material with one or more water soluble zinc salts;

(b) treating the impregnated carbonous material in such a way as to precipitate, into the structure of the carbonous material, said metal as its oxide or in a form which can be readily converted to its oxide under the pyrolysis conditions of step (c) below; and

(c) pyrolyzing the treated carbonous material at a temperature from about 400° C. to about 700° C., at gas residence times of less than about 30 seconds and solids residence times from about 5 to 100 minutes, wherein a reducing gas consisting essentially of hydrogen is introduced during pyrolysis.

4,439,306

PROCESS FOR THE EXTRACTION OF HYDROCARBONS FROM A HYDROCARBON-BEARING SUBSTRATE AND AN APPARATUS THEREFOR

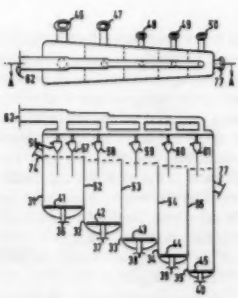
Heinz Voetter; Hubrecht C. A. van Meurs; Richard C. Darton, all of The Hague, and Rajamani Krishna, Amsterdam, all of Netherlands, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Apr. 19, 1982, Ser. No. 369,685

Claims priority, application United Kingdom, Apr. 22, 1981, 8112490; Dec. 30, 1981, 8139075

Int. Cl.³ C10G *1/02*

U.S. Cl. 208—11 R **20 Claims**



1. In a process for the extraction of hydrocarbons from a hydrocarbon-bearing oil shale, comprising the steps of: heating the hydrocarbon-bearing oil shale in the substantial absence of oxygen at a temperature in the range of from 400° C. to 600° C. by mixing it with hot spent oil shale, said heating of the hydrocarbon-bearing oil shale yielding a coke-bearing spent oil shale and liberated hydrocarbons; recovering the liberated hydrocarbons; and combusting by separate combustion the coke-

bearing spent oil shale to produce the hot spent oil shale for mixing with the hydrocarbon-bearing oil shale, the improvement comprising the steps of:

passing the hydrocarbon-bearing oil shale in the form of particles having a diameter of 0.5 to 5 mm through a plurality of horizontally disposed retorting stages in a substantially fluidized bed condition, in at least some of which stages the hydrocarbon-bearing oil shale is mixed with hot spent oil shale wherein hydrocarbon-bearing shale is fed to a first stage and treated coke-bearing shale is withdrawn from a last stage; and

passing an inert stripping gas in cross-current flow with respect to the passage of the hydrocarbon-bearing oil shale particles and at a flow rate in the range of from 0.1 to 2.0 m/s to thereby remove the liberated hydrocarbons from each stage as product.

4,439,307

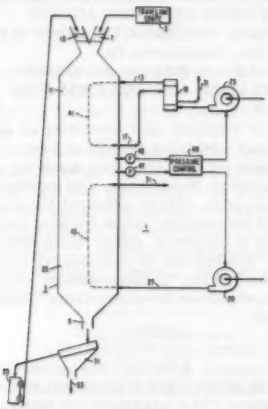
HEATING PROCESS GAS FOR INDIRECT SHALE OIL RETORTING THROUGH THE COMBUSTION OF RESIDUAL CARBON IN OIL DEPLETED SHALE

Louis H. Jaquay, Upper St. Clair, Pa., and Albert C. Mengon, deceased, late of Beaver, Pa. (by Mary A. Mengon, administratrix), assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jul. 1, 1983, Ser. No. 510,290

Int. Cl.³ C10G *1/02*; C10B *49/02*, *53/06*

U.S. Cl. 208—11 R **7 Claims**



1. A process for reheating recycle gas used in indirect retorting of oil from oil shale and from which the oil has been removed, utilizing the residual carbon in hot oil depleted shale said method comprising the steps of:

charging hot oil depleted shale containing residual carbon into the top of a vertical shaft furnace for descending passage therethrough;

feeding an oxygen containing gas into the upper portion of said furnace for concurrent downward flow with the hot shale to effect combustion of the residual carbon therein in the upper portions of said vertical shaft furnace and resulting in the generation of hot spent shale and combustion gases;

withdrawing the combustion gases from the lower part of the upper portion of said furnace;

introducing said recycle gas into the bottom of the vertical shaft furnace for ascending flow countercurrent to the descending flow of the hot spent shale to heat said recycle gas and cool said spent shale;

withdrawing the heated recycle gas from the upper part of the lower portion of the furnace below the point at which the downwardly flowing combustion gases are withdrawn, for use in retorting additional oil shale;

removing the cooled spent shale from the bottom of the vertical shaft furnace; and

recycling a portion of the cooled spent shale to the top of the vertical shaft furnace to control the temperature of combustion of the residual carbon in the hot oil depleted shale charged into said furnace.

4,439,308

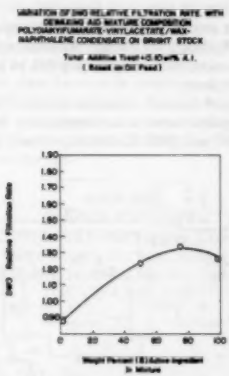
SOLVENT DEWAXING WAXY BRIGHT STOCK USING A COMBINATION POLYDIALKYLFUMARATE-VINYL ACETATE COPOLYMER AND WAX-NAPHTHALENE CONDENSATE DEWAXING AID

David A. Gudelis, and Lloyd E. Reid, both of Sarnia, Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 29, 1982, Ser. No. 426,712

Int. Cl.³ C10G *73/04*

U.S. Cl. 208—33 **5 Claims**



1. A solvent dewaxing process comprising mixing a waxy hydrocarbon oil bright stock with dewaxing solvent and a dewaxing aid wherein said dewaxing aid comprises a mixture of:

A. poly di alkyl fumarate/vinyl acetate copolymer having alkyl side chain moieties of from C_{16}–C_{24}+ in length with an average pendent side chain length of predominantly (>50%) C_{20}; and

B. a wax naphthalene condensation product, wherein components (a) and (b) are used in a weight ratio to each other ranging from about 45/55 to 1/100 of (a) to (b); and chilling said oil/dewaxing solvent/dewaxing aid mixture to form a slurry comprising solid particles of wax and a solution of dewaxed oil and dewaxing solvent and separating said wax from said solution.

4,439,309

TWO-STAGE HYDROGEN DONOR SOLVENT CRACKING PROCESS

Marvin I. Greene, Oradell, and Abraham P. Gelbein, Morristown, both of N.J., assignors to Chem Systems Inc., Tarrytown, N.Y.

Filed Sep. 27, 1982, Ser. No. 423,657

Int. Cl.³ C10G *69/06*

U.S. Cl. 208—51 **34 Claims**

1. A process for the cracking of a carbonaceous liquid feedstock comprising the steps of:

(a) separating a carbonaceous liquid feedstock into a first middle distillate fraction, having a boiling temperature, at atmospheric pressure, in the range of between 175° and 300° C. and a first residual fraction, having an initial boil-

ing temperature, at atmospheric pressure, in the range of between 260° and 540° C.;

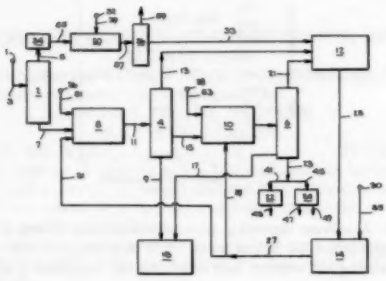
(b) supplying a first reaction mixture comprising a recycle stream of hydrogen-donating material and said first residual fraction, recovered from step (a), to a first cracking reaction zone;

(c) reacting said first reaction mixture in said first cracking reaction zone at a temperature in the range of between 250° and 800° C. and a pressure in the range of between 30 and 200 atmospheres for a period in a range of between 15 seconds and 5 hours whereby a first cracked product stream is obtained;

(d) separating said first cracked product stream into a second middle distillate fraction having a boiling temperature, at atmospheric pressure, in the range of between 175° and 300° C., a second residual fraction having an initial boiling temperature, at atmospheric pressure, in the range of between 260° and 540° C., and a first distillate hydrogen enriched stream having an initial boiling temperature, at atmospheric pressure, in the range of between 40° and 540° C.;

(e) supplying a second reaction mixture comprising a recycle stream of hydrogen-donating material and said second residual fraction, recovered in step (d), to a second cracking reaction zone;

(f) reacting said second reaction mixture in said second cracking rection zone at a temperature in the range of between 250° and 800° C. and a pressure in the range of



between 30 and 200 atmospheres for a period in the range of between 15 seconds and 5 hours whereby a second cracked product stream is obtained;

(g) separating said second cracked product stream into a third middle distillate fraction, having a boiling temperature, at atmospheric pressure, in the range of between 175° and 300° C., a third residual fraction having an initial boiling temperature, at atmospheric pressure, of at least 425° C. and a second distillate hydrogen enriched stream having an initial boiling temperature, at atmospheric pressure, in the range of between 40° and 540° C.;

(h) dehydroisomerizing said first middle distillate fraction in the presence of gaseous hydrogen and a reforming catalyst whereby a fourth middle distillate fraction is formed and comprises at least 30% by weight of two and three ring aromatics having ten to twenty carbon atoms per molecule;

(i) hydrogenating said second, said third and said fourth middle distillate fractions in the presence of gaseous hydrogen and a solid base metal catalyst whereby a hydrogen-donating material comprising at least 30% by weight of 2-ring hydroaromatics having ten to twenty carbon atoms per molecule is formed;

(j) recycling said hydrogen donating material formed in step (i), to said first cracking reaction zone, in accordance with step (b), and to said second cracking reaction zone, in accordance with step (e); and

(k) recovering said first distillate hydrogen enriched stream and said second distillate hydrogen enriched stream as products.

4,439,310

PETROLEUM PROCESSING WITH LOW ACIDITY CATALYST

Costandi A. Audeh, and Eric J. Y. Scott, both of Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 16, 1981, Ser. No. 274,136

Int. Cl.³ C10G *47/16, 11/05*

U.S. Cl. 208—111 **15 Claims**

1. A process for upgrading a high boiling hydrocarbon oil, in which process, at least a portion of the waxy or non-waxy crackable constituents of said oil are cracked to normally liquid products of lower boiling range, which process comprises contacting said hydrocarbon oil with a catalyst of enhanced gasoline and distillate selectivity which is a heat-stable crystalline zeolite having a silica to alumina ratio greater than 12 and a constraint index of 1 to about 12 in a matrix comprising an amorphous siliceous oxide which is a thermally degraded heat-sensitive crystalline zeolite, said catalyst having an acid activity measured by the alpha scale of less than 10, with said contacting being conducted at 650 to 850 degrees F. and at a pressure not less than about 200 psi.

4,439,311

REREFINING USED LUBRICATING OIL WITH HYDRIDE REDUCING AGENTS

Richard H. O'Blasny, Natchitoches, La., assignor to Delta Central Refining, Inc., Natchitoches, La.

Filed Jan. 4, 1982, Ser. No. 336,900

Int. Cl.³ C10G *7/10, 7/00;* **C10M** *11/00*

U.S. Cl. 208—179 **17 Claims**

1. A method of rerefining used lubricating oil comprising contacting the used lubricating oil with at least one hydride reducing agent selected from the group consisting of sodium borohydride, potassium borohydride, zinc borohydride, sodium cyanoborohydride, sodium sulfurated borohydride, sodium trioxyacetal borohydride, sodium trialkoxy borohydride, sodium hydroxyl borohydride, sodium borohydride anilide, tetrahydrofuran borohydride, di-methyl-butyl borohydride, lithium-aluminum hydride, lithium-aluminum tri-oxymethyl hydride, sodium-aluminum-2-methoxyethoxy hydride, and aluminum hydride.

4,439,312

CATALYST FOR HYDROTREATING HEAVY HYDROCARBON OILS, METHOD OF PREPARING SAME AND PROCESS FOR HYDROTREATING HEAVY HYDROCARBON OILS

Sachio Asaoka; Takeo Ono, and Yoshimi Shiroto, all of c/o Chiyoda Chemical Engineering & Construction Co., Ltd. 12-1, Tsurumi-Chuo 2-chome, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, Japan

Division of Ser. No. 210,049, Nov. 24, 1980, Pat. No. 4,367,165. This application May 19, 1982, Ser. No. 379,926

Claims priority, application Japan, Nov. 27, 1979, 54-153132

Int. Cl.³ C10G *45/08*

U.S. Cl. 208—216 PP **8 Claims**

1. A process for hydrotreating a heavy hydrocarbon oil containing asphaltenes and heavy metals, comprising the step of reacting the heavy hydrocarbon oil with hydrogen at a temperature of between 350° and 450° C., a pressure of between 30 and 250 Kg/cm^2G and a liquid space velocity of between 0.1 and 10 $hour^{-1}$, with a hydrogen to oil ratio of between 100 and 2000 Nl/l, in the presence of a catalyst comprising

a carrier which is a calcined composite of a mixture of a clay mineral consisting mainly of magnesium silicate having a double-chain structure and a pseudoboehmite which shows a powder X-ray diffraction spectrum obtained by applying a $CuK_{\alpha 0}$ ray such that the half value width of the

peak on the (020) plane is between about 0.8° and 4.0° and the intensity of said peak is between 1.2 and 8.0 times as high as that at $2\theta = 10°$; and

at least one catalytic metal component composited with said carrier, the metal of said catalytic metal component being selected from the group consisting of the metals belonging to Groups VB, VIB, VIII and IB of the Periodic Table.

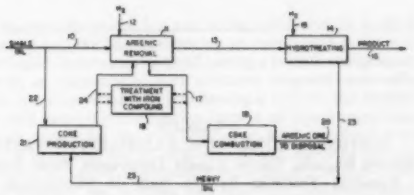
4,439,313
REMOVAL OF ARSENIC IMPURITY FROM HYDROCARBONS

Harvey D. Schindler, Fairlawn, and Morgan C. Sze, Portsmouth, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 213,202, Dec. 5, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,662

Int. Cl.³ C10G *25/00*; C01G *28/00, 28/02*; C10L *9/02*

U.S. Cl. 208—251 H **10 Claims**



1. In a process for removing arsenic from a hydrocarbon containing feed including arsenic as an impurity by depositing arsenic impurity on a solid contact material, the improvement comprising:

heating said contact material including deposited arsenic in the presence of an iron compound added to the contact material, said iron compound being a compound which reacts with arsenic to produce an iron-arsenic compound suitable for disposal, said heating being to a temperature of at least 1200° F. and at which the iron compound reacts with the deposited arsenic to produce said iron-arsenic compound.

4,439,314
FLOTATION REAGENTS

Robert M. Parlman, and Clarence R. Bresson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 9, 1982, Ser. No. 406,156

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—166 **7 Claims**

1. A composition useful in the collection of metal-containing substances via the froth flotation of ores containing them which comprises:

(a) sodium isopropylxanthate,

(b) n-dodecylmercaptan, and

(c) at least one dispersant containing a polyalkylene glycol conforming to the general formula

$$HO—(R^2—O)_x—R^3$$

where R^2 is a branched or straight chain alkylene radical of about 3 to about 5 carbon atoms with the proviso that at least 2 carbon atoms separate the oxygen atoms, R^3 is hydrogen, methyl, or ethyl, and x is an integer from about 6 to about 17.

4,439,315
METHANE GENERATOR

C. H. Whiteside, 2600 Dudley Rd., Kilgore, Tex. 75662

Filed Jun. 8, 1982, Ser. No. 386,226

Int. Cl.³ C02F *11/04*

U.S. Cl. 210—90 **10 Claims**

1. A biogas generator comprising, in combination:

a liquid reservoir having first and second distinct zones and a liquid which supports plant growth in said reservoir and therefore said zones,

a first said zone of said reservoir growing a supply of plant biomass therein,

a second said zone of said reservoir contiguous with said first zone to receive and biodegrade said plant biomass producing a biogas,

collection means including an imperforate opaque top wall to encourage plant decomposition overlying said second zone to collect said biogas produced therein,

conveying means at a boundary of said zones to convey said plant biomass from said first zone to said second zone as needed to control the amount of biogas produced,

and scavenging means to draw off biogas from said collection means to a site of storage and use

whereby said plant biomass is continuously harvestable and biodegraded to produce a biogas to be used as an energy source and said plant biomass once degraded serves as nutrient for further plant biomass growth defining a continous closed system.

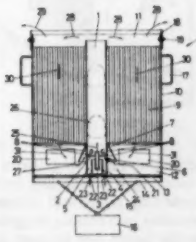
4,439,316
WATER PURIFIER

Sadao Kozima, Tokyo, and Hisao Makino, Chiba, both of Japan, assignors to Kaiyo Koggyo Co. Ltd., Tokyo, Japan

Filed Jun. 14, 1982, Ser. No. 388,471

Int. Cl.³ C02F *3/06*

U.S. Cl. 210—150 **5 Claims**



1. A water purifier comprising:

a cylinder having a partition thereacross defining an air chamber at the lower end thereof and having water suction openings therein just above said partition and opening into said cylinder, the bottom of said air chamber having bottom openings therein;

a sleeve on the bottom of said air chamber and extending up into said chamber to a point spaced from said partition, said bottom openings being around the outside of said sleeve;

a ventilation tube extending through said partition into said cylinder from within said sleeve;

means for introducing compressed air into said air chamber for producing successive flows of air upwardly through said ventilation tube into said cylinder to form a plurality of successive masses of air filling said cylinder and moving upwardly in said cylinder for pumping successive masses of water to be purified up said cylinder;

a plurality of unfilled tubes packed in a side-by-side relation in at least one honeycomb tube structure around and laterally supported by said cylinder with the tops open to receive water from the successive masses of water from

the top of said cylinder and extending straight through the honeycomb structure to cause the water to flow down through the tubes for purification, the bottoms of the tubes ending at a position above the level of said water suction openings and being open for discharging the water into the space around said cylinder adjacent said suction openings; and

a protecting sleeve around and protecting said honeycomb structure.

4,439,317

SEWAGE TREATMENT SYSTEM

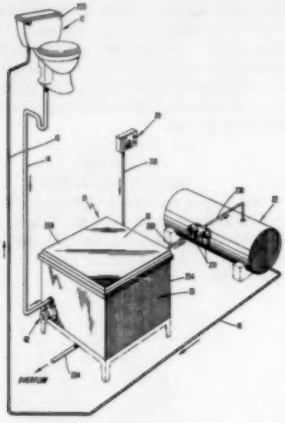
Donald Jarrell, 4510 Glendale Pl., Nashville, Tenn. 37215, assignor to Donald Jarrell; John G. Logan, III and Richard H. Carpenter, all of Nashville, Tenn., a part interest

Division of Ser. No. 213,665, Dec. 5, 1980, Pat. No. 4,350,587. This application Mar. 31, 1982, Ser. No. 363,948

The portion of the term of this patent subsequent to Sep. 21, 1999, has been disclaimed.

Int. Cl.³ C02F *3/04*

U.S. Cl. 210—151 **9 Claims**



1. In a waste treatment apparatus of the type comprising tank means, means for delivering waste liquid to said tank means, nozzles submerged in said tank means, means for delivering oxygen-containing gas to said nozzles, which gas is converted by said nozzles into minute oxygen-containing bubbles which permeate the liquid and support the aerobic digestive action of bacteria in the liquid, and means for delivering ozone gas to the treated liquid to disinfect same for delivery to an outlet, the improvement wherein:

said tank means comprises:

aerobic pre-treatment compartment means including at least one aerobic pre-treatment compartment having an inlet communicating with said liquid delivering means for receiving waste liquid, and including an outlet for pre-treated waste liquid,

some of said nozzles being submerged in said pre-treatment compartment means to saturate the latter with minute oxygen-containing bubbles to support aerobic digestive action of bacteria,

an intensive aerobic treatment compartment connected with said outlet of said pre-treatment compartment means to receive pre-treated waste liquid,

said intensive treatment compartment including on outer wall and containing therein an upright porous member forming a closed loop which is spaced inwardly from said outer wall, said porous member supporting the growth of bacteria thereon for consuming waste matter,

said porous member being disposed across the path of travel of the pre-treated liquid, and having its lower end sealed against the passage of liquid therebeneath, so that all of the pre-treated liquid is required to pass through the porous member,

some of said nozzles being disposed in said intensive treatment compartment between said wall and said porous member to saturate said intensive treatment compartment with minute oxygen-containing bubbles, said last-named nozzles having their outlets oriented for establishing a circular flow of liquid in one direction around said porous member,

a disinfecting compartment communicating by gravity flow with liquid that has passed through said porous member,

nozzle means submerged in said disinfecting compartment and communicating with a source

of ozone gas for saturating the liquid in said disinfecting compartment with ozone gas bubbles to disinfect the liquid.

4,439,318

SYSTEM FOR TREATING RADIOACTIVE WASTE

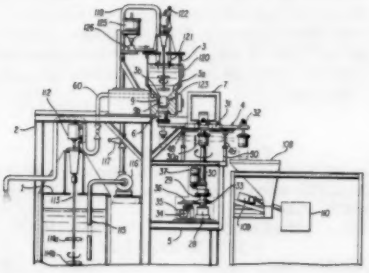
Masaru Hayashi, Tokyo; Atsushi Tagusagawa, Kobe; Fumiaki Komatsu; Yoshihisa Sawada, both of Nishinomiya, and Yorihisa Sakaki, Akashi, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Dec. 29, 1980, Ser. No. 221,355

Claims priority, application Japan, Dec. 28, 1979, 54-184308[U]; May 6, 1980, 55-060291

Int. Cl.³ G21F *9/20, 9/06, 9/10*

U.S. Cl. 210—208 **6 Claims**



1. A system for treating radioactive waste, comprising:

a storage tank holding a slurry of the radioactive waste;

a condensing tank for condensing the slurry of radioactive waste received from said storage tank;

a dryer for drying the condensed radioactive waste;

a hopper for receiving the dried radioactive waste;

a rotary mechanism for transferring the radioactive waste from said condensing tank and to said dryer and hopper, said rotary mechanism comprising a plurality of containers for holding the radioactive waste, rotary arms for supporting said containers, a rotational drive mechanism for rotating said rotary arms, means for discharging the radioactive waste from said containers to said hopper, and a lift mechanism for vertically lifting said containers up and down; and

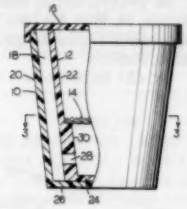
a rotary collector positioned in a lower portion of said condensing tank for receiving the condensed radioactive waste and selectively transferring it to said containers.

4,439,319

RECEPTACLE FOR THE COLLECTION OF MEDICAL SPECIMENS AND THE LIKE

John G. Rock, 130 Forest Rd., Davenport, Iowa 52803

Filed Jul. 16, 1982, Ser. No. 398,741
Int. Cl.³ B01D 29/02
U.S. Cl. 210—238 6 Claims



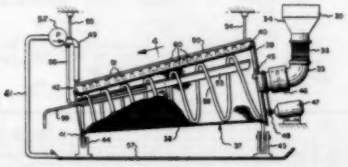
1. Receptacle means for use in the collection of medical specimens and the like, comprising an open-toppd outer container liquid-impervious material having a bottom and an annular wall, an open-topped inner container disposed removably within the outer container and having a bottom and annular wall, said inner container being formed of liquid-impervious material except for the provision of at least one fluid drain aperture in its wall spaced relatively closely above its bottom, a foraminous partition intermediate the top and bottom of the inner container and dividing said inner container into upper and lower compartments, said partition being spaced above the drain aperture, means supporting the partition in the inner container for upward removal thereof from said inner container, and cover means for removably covering the open top of the outer container and thus also closing the open top of the inner container.

4,439,320

SOLIDS CONCENTRATOR

Arie Blok, 1422 Overlea Dr., Dunedin, Fla. 33528

Continuation of Ser. No. 858,775, Dec. 8, 1977, abandoned, Continuation-in-part of Ser. No. 703,126, Jul. 7, 1976, Pat. No. 4,062,776. This application Jun. 29, 1981, Ser. No. 278,063
The portion of the term of this patent subsequent to Dec. 13, 1994, has been disclaimed.
Int. Cl.³ B01D 33/10
U.S. Cl. 210—394 4 Claims



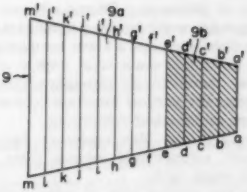
1. A solids concentrator comprising a frusto-conical drum including a foraminous side wall screen and having a large inlet end and a smaller open outlet end, said frusto-conical drum including a series of spaced elongated frame members extending lengthwise of said drum externally of said side wall screen, said side wall screen being comprised of a series of separate screen portions, and means for fastening each of said screen portions between respective pairs of said series of spaced elongated frame members, each of said frame members including a bar portion lying in a radial plane, and said screen portions each having a free edge portion clamped to a radially extending face of a respective bar portion, said screen having a straight line taper from said large inlet end to said smaller open outlet end, means for introducing a mixture of solids and liquid into said inlet end, means for rotating said drum, and conveying means disposed within said drum for conveying the solids toward said open outlet end thereof as the liquid escapes through said screen, said conveying means comprising a spiral vane fixedly disposed within said drum along and closely adjacent an inner periphery of said foraminous side wall for constantly urging liquid through said side wall, said spiral vane being in the form of a helix having a large diameter end adjacent said inlet end and a small diameter end adjacent said outlet end, said spiral vane having a constant taper corresponding to that of said side wall screen and a decreasing pitch and diameter as said vane extends from said large inlet end toward said smaller outlet end, said solids concentrator further including spraying means for spraying a cleansing liquid along a top portion of said side wall screen for constantly cleansing said side wall screen, and a pan contained within said screen for receiving the cleansing liquid and foreign matter carried thereby and discharging said cleansing liquid and foreign matter separately from said drum, a sump disposed beneath said drum for collecting liquid draining through said side wall screen, and means for drawing liquid from said sump and for supplying it under pressure to said spraying means.

4,439,321

FILTER MEANS

Yoshihiro Taki, Nagoya; Hajime Akado, Anjo; Toshiaki Fukuta, Anjo, and Susumu Miyakawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 14, 1982, Ser. No. 388,169
Claims priority, application Japan, Jun. 23, 1981, 56-97036; Jun. 23, 1981, 56-97037
Int. Cl.³ B01D 27/06, 50/00
U.S. Cl. 210—493.1 4 Claims



1. A fluid cleaner assembly comprising:

a casing;

a generally circular filter means for filtering fluid disposed within said casing;

an inlet port provided in said casing so as to be communicated with one axial end of said filter means; and

an output port provided on said casing so as to be communicated with the other axial end of said filter means and so as to be located adjacent to a substantial centre portion of said filter means,

said filter means having two-dimensional wave forms spreading radially from an axis of said filter means and has a first and a second filter sections which are made of one sheet material,

said first filter section having a higher permeability than said second filter section,

said first filter section being disposed adjacent to a substantial centre portion of said filter means, and

said first and second filter sections being arranged in parallel to each other with respect to an axial direction of said filter means.

4,439,322

POLYMETHYL METHACRYLATE MEMBRANE

Takeshi Sonoda; Yoshitaka Tanaka; Shigenori Takenaka, all of Kamakura, and Tatsuo Nogi, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,570
Claims priority, application Japan, Jul. 2, 1980, 55-89100
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—500.2 19 Claims

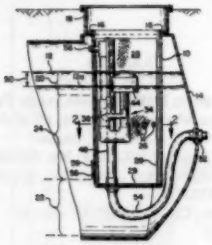
1. A ionically crosslinked polymethyl methacrylate separation membrane which is impermeable to red and white blood cells and platelets having an albumin permeability of at least about 30%, and having a water permeation rate of about 0.1 to 60 liters/hr.m².mmHg.

4,439,323

METHOD OF DISCHARGING SEPTIC TANK FILTERED EFFLUENT

Harold L. Ball, Roseburg, Oreg., assignor to Orenco Systems, Inc., Roseburg, Oreg.

Division of Ser. No. 279,959, Jul. 2, 1981, abandoned. This application May 24, 1982, Ser. No. 381,029
Int. Cl.³ C02F *3/28*
U.S. Cl. 210—608 4 Claims



1. A method of discharging filtered effluent from a septic tank containing waste water having a significant concentration of waste solids distributed into a lower horizontal sludge layer and an upper horizontal scum layer with a relatively clear horizontal layer therebetween through which waste solids migrate in a generally vertical direction between said sludge and scum layers, said method comprising:

(a) providing a hollow filter enclosure, having a filtering surface with exterior and interior sides, respectively, within said septic tank;

(b) exposing the exterior side of said filtering surface to waste water occupying a predetermined level within said septic tank located above said sludge layer and below said scum layer, while simultaneously preventing exposure of said exterior side of said filtering surface to waste water within said septic tank which does not occupy said predetermined level by surrounding said filtering surface with a housing having apertures located in said housing to correspond to said predetermined level of said waste water, said housing being otherwise impervious to the passage of said waste water;

(c) exposing an incremental effluent discharge apparatus, communicating between the interior and exterior of said septic tank and having a cross sectional area for conducting effluent which is smaller than the area of said filtering surface, operatively to the interior side of said filtering surface while preventing operative exposure of said discharge apparatus to waste water exterior of said filtering surface; and

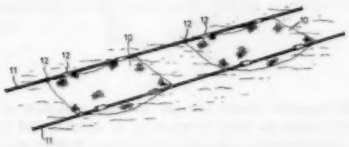
(d) passing effluent, from said waste water occupying said predetermined level, through said aperatures and said filtering surface from the exterior side to the interior side thereof and thence through said incremental effluent discharge apparatus to the exterior of said septic tank by passing said effluent through said incremental effluent discharge apparatus in predetermined incremental amounts which are insufficient to permit said scum layer to descend into said pedetermined level.

4,439,324

REMOVAL OF OIL FROM WATER

Alfred F. Crotti, 5, Deanery St., London, W1Y 5LH, England

Continuation of Ser. No. 194,976, Oct. 8, 1980, abandoned. This application Jun. 18, 1982, Ser. No. 389,760
Claims priority, application United Kingdom, Oct. 10, 1979, 7935253; Mar. 11, 1980, 8008198
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—691 8 Claims



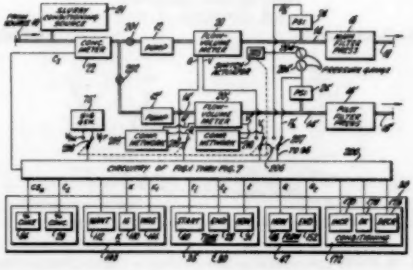
1. A method of removing oil from water, which method comprises the steps of applying to water to be treated at least one bag loosely containing washed and dried chicken or turkey feathers, the or each bag having means defining openings sufficiently large to permit oil to contact the feathers yet sufficiently small to retain feathers within the bag, and allowing feathers to take up the oil.

4,439,325

PRESSURIZED FILTRATION SYSTEM

Norman J. Blais, Fiskdale, Mass., assignor to CPC Engineering Corporation, Sturbridge, Mass.

Continuation-in-part of Ser. No. 405,910, Aug. 6, 1982, abandoned, which is a continuation of Ser. No. 214,523, Dec. 9, 1980, abandoned. This application Jul. 11, 1983, Ser. No. 512,774
Int. Cl.³ B01D *25/12*
U.S. Cl. 210—740 11 Claims



11. In the filtration of a liquid-solids composition utilizing a cyclically operated filter press of a known volume having an inlet and outlet and a recommended terminal pressure of the composition fed to said inlet, the method of determining the quality of the cake formed in said filter press comprising the steps of measuring the volume of the composition delivered to said filter press, the concentration of particulates contained in said composition and the density of said particulates, determining the percent of the dry solids CS per unit mass of cake contained in the volume of said filter press, measuring the elapsed time t_f of the filtering cycle, measuring the pressure of composition fed to said filter, determining a quantity K repre-

senting the rate at which the liquid will permeate the cake being formed according to the following equation when said pressure is equal to at least 90% of the recommended terminal pressure:

$$K = CS^2/t_e^x,$$

where x = 0.54 to 0.8

modifying the composition to achieve a value of K previously determined experimentally to effect the desired quality of cake in said filter within a predetermined period of time and continuing the cycle of operation until the cake approximately fills said filter.

4,439,326

PROCESS FOR REMOVING AMMONIUM NITRATE FROM AQUEOUS SOLUTIONS

Michael Heilgeist, Linkenheim, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,667

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048002

Int. Cl.³ G21F *9/06*

U.S. Cl. 210—757 **5 Claims**

1. Process for removing ammonium nitrate of NH_4NO_3 (AN) from an aqueous solution, comprising adding at least one nitrogen-oxygen (N-O) compound which is a nitrous oxide in the form of NO, NO_2 or N_2O_4, to the aqueous solution containing the AN, the N-O compound being in gaseous or liquid state, at a temperature above room temperature but below the boiling point of the solution containing the AN and under normal pressure.

4,439,327

BACKWASH MULTIPLE ALLUVIAL FILTER AND METHOD OF FILTERING THEREWITH

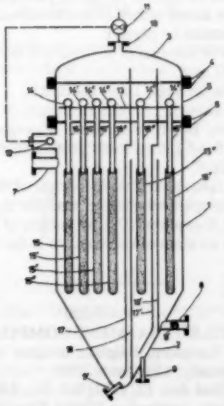
Hans Müller, Erlenbach, Switzerland, assignor to Dr. Muller AG, Maennedorf, Switzerland

Filed Jun. 29, 1982, Ser. No. 393,361

Claims priority, application Switzerland, Jul. 16, 1981, 4653/81

Int. Cl.³ B01D *35/12, 29/24, 29/38*

U.S. Cl. 210—772 **15 Claims**



1. A backwashing multiple alluvial filter, comprising a vertical filter container having a bottom; inlet and outlet means in said container; a plurality of collecting pipes removably mounted in said container; a plurality of rows of filter elements suspended on said collecting pipes; means for subdividing the interior of said filter container into at least two vertical chambers connected with one another by narrow vertical overflow shafts and each accommodating at least one of said rows of filter elements; and said subdividing means including separating walls which have different heights and some of which are spaced from said bottom so as to form said overflow shafts.

4,439,328

WELL SERVICING FLUID ADDITIVE

Randolph M. Moity, 208 Interlaken Dr., New Iberia, La. 70560

Filed Dec. 28, 1981, Ser. No. 334,837

Int. Cl.³ C09K *7/00*

U.S. Cl. 252—8.5 LC **9 Claims**

1. A fluid, pourable well servicing fluid additive comprising an oleaginous liquid, a water-soluble polymer selected from the group consisting of hydroxyethyl cellulose, carboxymethyl cellulose, hydroxyethyl carboxymethyl cellulose, guar gum, hydroxypropyl guar gum, hydroxyethyl guar gum, carboxymethyl guar gum, biopolymer gums derived from a bacterium of the genus xanthomonas, and mixtures thereof, an alkaline earth metal base, an organophilic clay gellant for said oleaginous liquid, and a fibrous material, wherein said oleaginous liquid is an organic liquid which has no substantial swelling effect on said water-soluble polymer, and wherein said fibrous material is derived from natural materials selected from the group consisting of asbestos, cotton, wood, bagasse, peat, sphagum moss, animal hair, and mixtures thereof.

4,439,329

AQUEOUS BASED FIRE FIGHTING FOAM COMPOSITIONS CONTAINING HYDROCARBYL SULFIDE TERMINATED OLIGOMER STABILIZERS

Eduard K. Kleiner, Pound Ridge, and Robert A. Falk, New City, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1981, Ser. No. 335,119

Int. Cl.³ A62D *1/04, 1/02*; A62C *1/12*

U.S. Cl. 252—8.05 **21 Claims**

1. An aqueous based fire fighting foam concentrate for 1 to 6% by volume proportioning, comprising

A. between about 0.1 and 10% by weight of an oligomer of the formula

$$R_1\text{-}E\text{-}S(O)_n[M_1]_x[M_2]_y[M_3]_zH \qquad (I)$$

wherein

R_1 is an oleophilic aryl, araliphatic, aliphatic or cycloaliphatic group selected from the group consisting of: phenyl or naphthyl each of which are unsubstituted or substituted by alkyl of up to 18 carbon atoms, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms, or alkanoylamino of up to 18 carbon atoms;

alkyl or alkenyl of up to 12 carbon atoms, each of which is substituted by phenyl or naphthyl which is, in turn, unsubstituted or substituted by alkyl of up to 18 carbon atoms, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms, or alkanoylamino of up to 18 carbon atoms;

alkyl or alkenyl of up to 25 carbon atoms, each of which are unsubstituted or substituted by hydroxy, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms or alkanoylamino of up to 18 carbon atoms; and

cycloalkyl of 5 to 7 carbon atoms, bicycloalkyl of 7 to 10 carbon atoms, cycloalkylalkylene of 6 to 12 carbon atoms or bicycloalkyl alkylene of 8 to 14 carbon atoms, each of which are unsubstituted or substituted by alkyl of up to 18 carbon atoms, alkoxy of up to 18 carbon atoms, chloro, bromo, alkanoyl of up to 18 carbon atoms, alkanoyloxy of up to 18 carbon atoms or alkanoylamino of up to 18 carbon atoms;

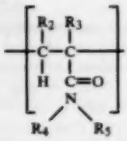
E is a direct bond or an organic covalently bonded linking group;

n is 0, 1 or 2;

$[M_1]$ is a hydrophilic optionally substituted acrylamido monomer unit;

$[M_2]$ is a copolymerizable non-acrylamido hydrophilic monomer unit;

$[M_3]$ is a copolymerizable hydrophobic monomer unit; wherein the acrylamido monomer units, $[M_1]$, are within the scope of the formula



(II)

wherein R_2 and R_3 are independently hydrogen, chloro or bromo, or one of R_2 and R_3 is alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or alkanoylamido of 2 to 4 carbon atoms and the other is hydrogen;

and each of R_4 and R_5 independently represent hydrogen, alkyl of 1 to 18 carbon atoms which is unsubstituted or substituted by hydroxy, alkoxy of 1 to 4 carbon atoms, alkanoyl of 1 to 4 carbon atoms; alkanoyloxy of 1 to 4 carbon atoms; alkanoylamino of 1 to 4 carbon atoms; cyano; carboxy; ureido; alkylureido or dialkylureido wherein the alkyl group in each case contains 1 to 4 carbon atoms; amido; N-alkylamido or N,N-dialkylamido wherein the alkyl group in each case contains 1 to 4 carbon atoms; allyloxy; bromo; chloro; amino; N-alkylamino, N,N-dialkylamino or N,N,N-trialkylamino halide wherein the alkyl group in each case contains 1 to 4 carbon atoms; N-carboxyalkylamino, N-(carboxyalkyl)-N-alkylamino or N-(carboxyalkyl)-N,N-dialkylamino wherein the alkyl group in each case contains 1 to 4 carbon atoms; mercapto; alkylthio of 1 to 4 carbon atoms; morpholino; phenyl; or tolyl or is phenyl or phenyl substituted by carboxy, chloro, nitro, sulfo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; or is allyl, amino, naphthyl, cycloalkyl of 6 to 12 carbon atoms, phenylamino, N-alkylamino, N,N-dialkylamino or N,N,N-trialkylamino halide where in each case the alkyl group has 1 to 4 carbon atoms; or R_4 and R_5 taken together with the nitrogen to which they are attached represent morpholino, aziridino, piperidino or pyrrolidino;

with the proviso that the sum total of carbon atoms in R_2, R_3, R_4 and R_5 together contain no more than 10 carbon toms;

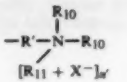
the copolymerizable non-acrylamido hydrophilic monomer units, $[M_2]$, are those of the formula

(III)

wherein

R_6 is hydrogen, carboxy, $—COOR_9$ or alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by carboxy or hydroxy;

R_7 is hydrogen or alkyl of 1 to 4 carbon atoms; and R_8 is carboxy, carboxyalkyl of 2 to 5 carbon atoms, carboxyphenyl, a 5 to 6 membered nitrogeneous heterocyclic moiety, hydroxyalkyl of 1 to 4 carbon atoms, sulfophenyl, sulfo, $—COOR_9$, $—SO_2NR_{10}R_{10}$, $—NHCOR_9$, $—COR_9$, $—SO_2R_9$, $—OR_{10}$, $—OCOR_9$ or



wherein

R_9 is alkyl of 2 to 6 carbon atoms substituted by sulfo, carboxy, hydroxy, methoxy, or $R_{12}(OCH_2CH_2)_mO—$ where R_{12} is hydrogen or alkyl of 1 to 4 carbon atoms and m is 1 to 20;

R_{10} is hydrogen, or lower alkyl of 1 to 5 carbon atoms which is substituted by sulfo, carboxy, hydroxy, methoxy or $R_{12}(OCH_2CH_2)_mO—$ where R_{12} and m are as defined above;

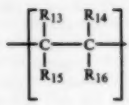
R' is a direct bond, alkylene of 1 to 6 carbon atoms or phenylene;

R_{11} is lower alkyl of 1 to 4 carbon atoms, phenyl or benzyl;

X is halo; and

n' is 0 or 1, and

the hydrophobic copolymerizable monomer units, $[M_3]$, are those of formula II above wherein the sum total of carbon toms in R_2, R_3, R_4 and R_5 together contain a total of more than 10 carbon atoms or are of the formula IV



(IV)

wherein

R_{13} and R_{14} are independently hydrogen, chloro, bromo, fluoro, or alkyl of 1 to 4 carbon atoms; R_{15} is hydrogen, chloro, bromo, fluoro, alkyl of 1 to 8 carbon toms, or $—COOR_{17}$; and

R_{16} is hydrogen, chloro, bromo, fluoro, alkenyl of 2 to 18 carbon atoms, alkyl of 1 to 18 carbon atoms, cyano, phenyl, phenyl substituted by alkyl of 1 to 4 carbon atoms or chloro, $—COOR_{17}$, $—SO_2NR_1R_{17}$ $—NHCOR_{17}$, $—COR_{17}$, $—SO_2R_{17}$, $—OR_{17}$ or $—OCOR_{17}$ wherein R_{17} is alkyl of 1 to 18 carbon atoms which is unsubstituted or substituted by chloro, bromo or phenyl, or alkenyl of 2 to 18 carbon atoms which is unsubstituted or substituted by chloro, bromo or phenyl;

the average of the sum of x, y and z is between about 3 and about 500; and

x/x+y+z is between 1 and about 0.5;

B. between about 0.1 to 60% by weight of fire fighting foam surfactants, fire fighting foam synergist/surfactant mixtures or fire-fighting foam protein hydrolyzates or mixtures thereof;

C. between 0 to about 70% by weight of thickeners, stabilizers, thixotropes, solvents or mixtures thereof;

D. between 0 to about 10% by weight of electrolytes; and

E. water in an amount sufficient to make up the balance of 100%.

4,439,330

TEXTILE TREATMENT COMPOSITIONS

Julius Ooms, Langdorp, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 12, 1982, Ser. No. 338,950

Claims priority, application United Kingdom, Jan. 16, 1981, 8101358

Int. Cl.³ D06M *13/46*

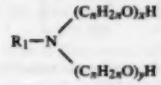
U.S. Cl. 252—8.8 **4 Claims**

1. An aqueous textile treatment composition comprising:

(a) from 13.5% to 20% of substantially water-insoluble cationic fabric softener or of a mixture thereof with nonionic fabric softener in a weight ratio of cationic softener:non-

ionic softener of at least 2.5:1, said cationic softener being selected from the group consisting of di-C_{12}–C_{24} alkyl and alkenyl quaternary ammonium salts, di-C_{12}–C_{24} alkyl and alkenyl imidazolinium salts and mixtures thereof,

(b) from 0.3% to 2.5% of an alkoxylated amine, or ammonium derivative thereof, of the general formula:



wherein R_1 is a C_{16}–C_{22} alkyl or alkenyl group, n is 2 and x and y are each a number average in the range from 1 to 2, the sum total of x and y being 2 or 3,

(c) from 600 to 1000 parts per million of electrolyte, and

(d) from 0.1% to 5% of a polyethyleneglycol having an average molecular weight in the range from 1000 to 40,000,

wherein the composition has a pH in the range from 3.5 to 7.0 and is in the form of a particulate dispersion of cationic fabric softener in an aqueous solution of alkoxylated amine or ammonium derivative thereof.

4,439,331

TEXTILE SOFTENER

Siegfried Billenstein, Burgkirchen; Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

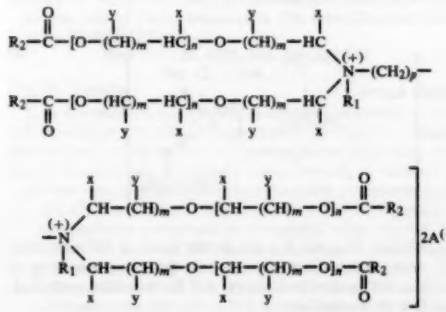
Filed Aug. 27, 1982, Ser. No. 412,141

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135014

Int. Cl.³ D06M *13/46*

U.S. Cl. 252—8.8 **8 Claims**

1. Liquid textile softener composed of an aquous solution or dispersion of compounds of the formula



wherein R_1 denotes C_1–C_4 alkyl, x and y each denote hydrogen or methyl, it being excluded, however, for x and y to denote simultaneously methyl, n is an integer of from 1 to 10, m is the integer 1 or 2, p is an integer of from 1 to 5, R_2 denotes C_8–C_{30} alkyl and A denotes an anion, and, if appropriate, other auxiliaries.

4,439,332

STABLE EMULSION COPOLYMERS OF ACRYLAMIDE AND AMMONIUM ACRYLATE FOR USE IN ENHANCED OIL RECOVERY

Simon Frank, Stamford; Anthony T. Coscia, South Norwalk, and Joseph M. Schmitt, Ridgefield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 933,225, Aug. 14, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,962

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **6 Claims**

1. A process for recovering oil from a subterranean-oil-bearing formation which comprises: introducing through a well bore into said formation a stable, aqueous flooding menstruum comprising an acrylamide-ammonium acrylate copolymer having a molecular weight above about one million and recovering enhanced yields of oil therefrom, said copolymer being prepared in the form of an emulsion, said emulsion comprising:

(1) an aqueous phase constituting from 70% to about 95% of the total weight of (1) and (2) said aqueous phase comprising 40 to 73% by wt water and dissolved therein from 27% to 60% by weight of emulsion polymerized, water-soluble copolymer having a molecular weight of at least one million said copolymer consisting essentially of about 50% to 75% by wt of copolymerized acrylamide and about 25% to 50% by wt of copolymerized ammonium acrylate said copolymer being the product of emulsion polymerization in the aqueous phase of said emulsion, of acrylamide and ammonium acrylate comonomers, and said ammonium acrylate monomer being prepared by neutralizing acrylic acid in said aqueous phase with ammonium hydroxide to pH in the range from about pH 6.5 to about pH 7.5 before being copolymerized with acrylamide in said emulsion;

(2) a liquid hydrocarbon oil in an amount ranging from about 5% to about 30%, by weight, based on the total weight of (1) and (2),

(3) a water-in-oil emulsifying agent disposed between said aqueous phase and said liquid hydrocarbon at a concentration of about 0.1% to 15.0%, by weight, based on the total weight of (1), (2) and (3), and optionally,

(4) an inverting hydrophilic surfactant of an ethoxylated octyl or nonyl phenol, the amount of said ethoxylated octyl or nonyl phenol ranging from about 1.5% to about 2.5%, by weight, said weight being based on the total weight of (1), (2), (3) and (4).

4,439,333

HEAVY BRINE VISCOSIFIERS

Roy F. House, Houston, and Lonnie D. Hoover, Chappell Hill, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed May 8, 1981, Ser. No. 261,897

Int. Cl.³ C09K *7/00*; B01F *3/00*

U.S. Cl. 252—8.55 R **5 Claims**

1. A polymeric composition useful for viscosifying aqueous brines at ambient temperature which comprises:

(a) from about 10% to about 30% by weight hydroxyethyl cellulose;

(b) from about 10% to about 40% by weight of a solid organic activating agent selected from the group consisting of phenol and substituted phenols wherein from 1 to 5 substituent groups are present in the molecule, the substituent groups being selected from the group consisting of OH, NH_2, NO_2, Cl, Br, and mixtures thereof; and

(c) an organic solvent for said activating agent which has no appreciable swelling effect on the hydroxyethyl cellulose.

4,439,334

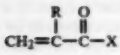
ENHANCED OIL RECOVERY METHODS AND SYSTEMS

John K. Borchardt, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 14, 1981, Ser. No. 283,251
Int. Cl.[3] C09K 3/00
U.S. Cl. 252—8.55 D 22 Claims

1. A method of enhancing the recovery of oil from a subterranean oil-containing formation wherein a viscous aqueous solution containing one or more water-soluble organic polymers is injected into the formation by way of at least one injection well penetrating the formation and forced through the formation towards at least one production well penetrating the formation, comprising:

preparing an aqueous injection solution of desired viscosity and other properties at the site of said injection and production wells by: combining one or more vinyl monomers with a substantially oxygen-free aqueous solvent, said vinyl monomers being selected from the group consisting of monomers and mixtures of monomers having the general formula:



wherein:

R is hydrogen or $-CH_3$;

X is $-NH_2$, $-NHR^1$,

$-OR^3$ or $-OM$, with the restriction that X is not $-OM$ when the aqueous polymerization solvent contains divalent metal;

R^1 is an alkyl radical having in the range of from 1 to 4 carbon atoms or

R^1 is R^4-Y;

R^2 is an alkyl radical having in the range of from 1 to 3 carbon atoms;

R^3 is an alkyl radical having in the range of from 1 to 3 carbon atoms;

R^4 is an alkyl radical having in the range of from 1 to 4 carbon atoms;

Y is $-SO_3H$, $-CO_2H$, $-SO_3M$ or $-CO_2M$; and

M is hydrogen or a metal from Group IA of the Periodic Table of the Elements; and

combining a free radical polymerization initiator with the resultant solution to cause the polymerization of said monomers and the formation of a concentrated aqueous viscous polymer solution; and

diluting said concentrated viscous aqueous polymer solution with additional amounts of the same substantially oxygen-free aqueous solvent to thereby form said aqueous injection fluid; and

injecting said aqueous injection fluid into said formation by way of said injection well.

4,439,335

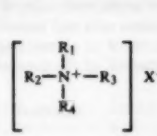
CONCENTRATED FABRIC SOFTENING COMPOSITIONS

Michael E. Burns, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 17, 1981, Ser. No. 322,315
Int. Cl.[3] D06M 13/46
U.S. Cl. 252—8.75 14 Claims

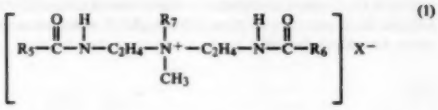
1. Concentrated aqueous fabric softener compositions which are pourable at 40° F., the said compositions comprising:

A. from 8% to about 12.5% of a mono nitrogen quaternary ammonium cationic softener salt having the formula



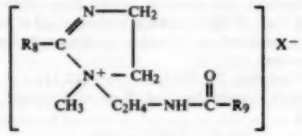
wherein R_1 and R_2 can be the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl groups, R_3 and R_4 can be the same or different and are selected from the group consisting of C_1 to C_3 alkyl or $-(C_nH_{2n}O)_xH$ groups wherein n is 2 or 3, x is from 1 to about 3, and wherein X^- is an anion selected from halide, methylsulfate or ethylsulfate;

B. from about 5% to about 18% of a second cationic softener salt selected from the group consisting of



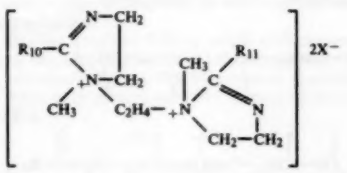
(1)

wherein R_5 and R_6 are the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl groups, wherein R_7 is selected from the group consisting of H, methyl, ethyl and $(C_nH_{2n}O)_xH$ wherein n is 2 or 3 and x is from 1 to about 5 and wherein X^- is selected from halide, ethylsulfate or methylsulfate;



(2)

wherein R_8 and R_9 are the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl groups, wherein X^- is halide, ethylsulfate or methylsulfate;



(3)

wherein R_{10} and R_{11} can be the same or different from each other and are selected from the group consisting of C_{14} to C_{20} alkyl and alkenyl and X^- is halide, methylsulfate or ethylsulfate;

C. from about 0.05% to 0.6% of an inorganic water-soluble ionizable salt; and

D. water;

wherein the total amount of Components A+B is from about 15% to about 23%, wherein there is unsaturation present on at least one of Components A or B such that the cationic active system has an Iodine Value of at least about 5.7.

4,439,336

LUBRICANT COMPOSITION CONTAINING MIXED FATTY ACID ESTER AND AMIDE OF DIETHANOLAMINE

Edward F. Zaweski, Town and Country, Mo., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 126,726, Mar. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 959,935, Nov. 13, 1978, Pat. No. 4,208,293. This application Jul. 1, 1981, Ser. No. 279,588

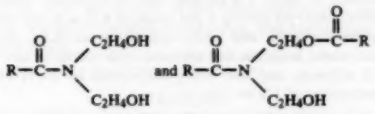
The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **8 Claims**

1. In a lubricating oil composition formulated for use in the crankcase of an internal combustion engine, said composition containing 0.01–3 weight percent zinc in the form of zinc dihydrocarbyldithiophosphate, the improvement of including in said composition about 0.05–5 weight percent of a reaction product formed by the process comprising reacting (a) about 1–3 moles of a C_{8-20} fatty acid with (b) one mole of diethanolamine while removing water formed in the reaction, said reaction product consisting mainly of N,N-bis-(2-hydroxyethyl) fatty amide and fatty acid ester thereof, said improvement resulting in reduced engine friction and improved fuel economy.

4. In a lubricating oil formulated for use in the crankcase of an internal combustion engine, said composition containing 0.01–0.3 weight percent zinc in the form of zinc dihydrocarbyldithiophosphate, the improvement of including in said formulated oil about 0.05–5 weight percent of an ester-amide mixture comprising as principal components:



wherein R is the aliphatic hydrocarbon residue of a fatty acid, said fatty acid containing about 8–20 carbon atoms, said improvement resulting in reduced engine friction and increased fuel economy.

4,439,337

COMPOSITION AND METHOD FOR PREVENTING FREEZING TOGETHER OF VARIOUS SURFACES

Kenneth H. Nimerick, Tulsa, and Claude T. Copeland, Broken Arrow, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 20, 1981, Ser. No. 323,159

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 **18 Claims**

1. A composition comprising in amounts sufficient to provide a composition which when applied to a surface reduces the tendency of the surface to become frozen to another surface in the presence of moisture under freezing conditions:

at least one of substantially water soluble components (1), (2), (3) comprising (1)about 5.0 to about 95.0 percent a polyhydroxy compound or monoalkyl ether thereof, (2) about 0.1 to about 10.0 percent an organic non-volatile compound having at least one hydrophilic group, (2) being different than (1), (3) optionally about 0.1 to about 45.0 percent a salt which functions to reduce the freezing point of water, (4) an organic polymer which functions to increase the viscosity and tackiness of the composition sufficiently to maintain the composition on a non-horizontal surface for a sufficient period of time to function to reduce the tendency of a surface to become frozen to another surface in the presence of moisture under freezing conditions and (5) about 5.0 to about 75 percent water.

4,439,338

SOLUTION FOR STRIPPING A LAYER OF TIN OR TIN-LEAD ALLOY FROM A SUBSTRATE BY MEANS OF A SPRAYING OPERATION

Francesco Tomaiuolo, Turin, and Michele Capano, Rivalta, both of Italy, assignors to Alfachimici S.p.A., Turin, Italy

Filed Sep. 21, 1982, Ser. No. 420,918

Claims priority, application Italy, Oct. 14, 1981, 68323 A/81

Int. Cl.³ C09K *13/00*

U.S. Cl. 252—79.1 **10 Claims**

1. A solution for selectively stripping a layer of tin or tin-lead alloy from a substrate, comprising in aqueous solution:

a first component being an organic acid of the group consisting of the alkylsulfonic acids having a number of carbon atoms from 1 to 4;

a second component being an organic oxidizer of the group consisting of the aromatic nitro-substituted and polynitro-substituted compounds having at least one group $—NO_2$ and a solubilizing group $—SO_3H$ or —COOH, and their alkaline salts; and

a third component being a compound of the group consisting of thiourea and alkyl-substituted or aryl-substituted thioureas having low molecular weight.

4,439,339

DESCALER COMPOSITION AND METHOD

Carl J. Doumit, 703 Hemlock St., Columbus, Miss. 39701

Filed Feb. 8, 1983, Ser. No. 464,943

Int. Cl.³ C02F *5/08*

U.S. Cl. 252—80 **6 Claims**

1. A composition for descaling fresh water production and storage equipment which comprises: hydrochloric acid at a concentration of about 2.6 to 3.4 M; dichloroacetic acid at a concentration of about 0.4 to 0.8 M; acetic acid at a concentration of about 3.6 to 4.5 M; about 5 to 10% by weight of a compound selected from the group consisting of isopropyl alcohol, isobutyl alcohol and esters of said isopropyl or isobutyl alcohol with hydrochloric acid, dichloroacetic acid or acetic acid, and mixtures thereof; and about 40 to 60% by weight of water.

4,439,340

CYANO-MONO-OR DIPHENYLBICYCLOHEXANE DERIVATIVES

Tetsuhiko Kojima; Masakazu Tsuji, and Shigeru Sugimori, all of Kanagawaken, Japan, assignors to Chisso Corporation, Osaka, Japan

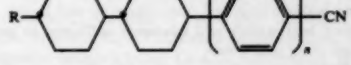
Filed Jul. 8, 1982, Ser. No. 396,484

Claims priority, application Japan, Jul. 9, 1981, 56-107382; Aug. 18, 1981, 56-129069

Int. Cl.³ C09K *3/34*; C07C *121/60*

U.S. Cl. 252—299.63 **4 Claims**

1. A compound expressed by the formula



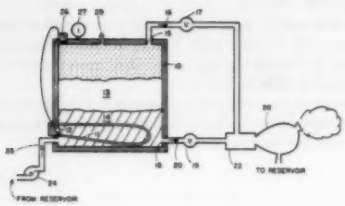
wherein R represents hydrogen or an alkyl group of 1 to 15 carbon atoms, and n is 1 or 2.

4. A liquid crystal composition which comprises a mixture of compounds at least one of which is a compound of claim 1.

4,439,341
SMOKE GENERATOR FOR USE WITH WATER AND SMOKE GENERANT

Edmund Swiatosz, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 21, 1983, Ser. No. 477,208
Int. Cl.³ C09K *3/30*; B01J *13/00*; B05B *1/24*
U.S. Cl. 252—305 **16 Claims**



1. An apparatus for generating smoke comprising, in combination:

means for heating a quantity of liquid comprising smoke generant liquid and water within a container such that the water held within said container is heated above its boiling point;

means for removing steam under pressure from said container, operably connected thereto;

independent means for removing liquid from said container, operably connected thereto;

means for mixing said steam and said liquid in such a manner as to generate a smoke via an outlet and having inputs from said steam removing means and said liquid removing means; and

means for replenishing said smoke generant liquid and said water, operably connected to said container.

10. An apparatus for generating smoke comprising in combination:

a boiler chamber having a plurality of inlet and outlet means;

means for supplying heat to fluids within said chamber disposed within said lower portion of said boiler chamber;

a first conduit operably connected to said chamber for removing gaseous effluents generated within said chamber;

a second conduit operably connected to said chamber for removing non-gaseous fluids therefrom;

an atomizing nozzle operably connected to receive input from said first and second conduits, and having an output; and

means for supplying water and a smoke generant liquid to said chamber.

13. A method of generating smoke comprising the steps of:

placing a liquid smoke generant within a container;

placing water within said container with said liquid;

applying heat within said container sufficient to generate steam from said water;

withdrawing controlled quantities of said steam and smoke generant by independent means;

mixing said steam and smoke generant such that a smoke is formed having the majority of its particles of a size less than ten microns in diameter.

4,439,342
AEROSOL PREPARATION

James J. Albanese, House Springs, Mo., assignor to United Industries Corporation, St. Louis, Mo.

PCT No. PCT/US80/00036, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980
Continuation-in-part of Ser. No. 58,732, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,211, Aug. 9, 1978, abandoned. This PCT application Jan. 17, 1980, Ser. No. 237,155
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ C09K *3/30*
U.S. Cl. 252—305 **23 Claims**

1. As aerosol preparation being non-emulsified and in the form of a dispersion for providing upon dispensing and applying to a surface a continuous, uninterrupted film comprising an active ingredient from the class consisting of initially pre-emulsified or partially pre-emulsified water insoluble compounds within the range of approximately 1 to 94.5% by weight of the preparation, a propellant from the class consisting of liquefied hydrocarbons and halocarbons, compressed gases, and combinations thereof, a film controlling agent within the range of approximately 1% to 20% by weight of the preparation for controlling the manner in which the propellant leaves the provided film, said propellant being soluble or insoluble in said agent, and a dispersal agent consisting of cocodiethanolamide within the range of 0.5 to 10% by weight of the preparation and being within such range in such relative amount as to be in excess of that required for stabilization of said active ingredient in emulsion form, said cocodiethanolamide being an amber liquid having a congealing point of approximately 6 degrees C., a specific gravity at 25 degrees C. of about 0.99, containing a maximum of about 3–4 percent free or unreacted fatty acid (as lauric acid) and having a pH value of 8–9 as a one percent dispersion in water, and being soluble in alcohols, glycols, ketones, esters, aromatic and aliphatic hydrocarbons, and chlorinated solvents, and also being dispersible in water at low concentrations of 1% to 2%.

4,439,343
AEROSOL PREPARATION

James J. Albanese, House Springs, Mo., assignor to United Industries Corporation, St. Louis, Mo.

Continuation of Ser. No. 58,732, Jul. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 932,211, Aug. 9, 1978, abandoned. This application Jul. 10, 1981, Ser. No. 282,050
The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.
Int. Cl.³ C09K *3/30*
U.S. Cl. 252—305 **37 Claims**

1. An aerosol preparation in the form of a dispersion comprising first and second phases in non-emulsified relationship, said first and second phases being immiscible and being normally distinctly separate to render the preparation unhomogenized, said first phase being aqueous and said second phase containing a water insoluble active ingredient in an amount approximately 0.1% to 50% by weight of the preparation, said preparation also containing a dispersal agent consisting of cocodiethanolamide within the range of 2½% to 10% by weight of the preparation, said cocodiethanolamide being an amber liquid having a congealing point of approximately 6 degrees C., a specific gravity at 25 degrees C. of about 0.99, containing a maximum of about 3–4 percent free or unreacted fatty acid (as lauric acid) and having a pH value of 8–9 as a one percent dispersion in water, and being soluble in alcohols, glycols, ketones, esters, aromatic and aliphatic hydrocarbons, and chlorinated solvents, and also being dispersible in water at low concentrations of 1% to 2%, there being a propellant from the class selected from gaseous and liquefied gaseous propellants and mixtures of the same under pressure adequate to disperse the preparation and an organic auxiliary solvent compatible with the selected propellant; said first phase being in an

amount constituting between approximately 10% to 75% by weight of the preparation, with the quantity being dependent upon the character of the selected propellant.

4,439,344

WATER DISPERSIONS

James J. Albanese, House Springs, Mo., assignor to United Industries Corporation, St. Louis, Mo.

PCT No. PCT/US80/00037, § 371 Date Sep. 2, 1980, § 102(e) Date Sep. 2, 1980, PCT Pub. No. WO81/01964, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 17, 1980, Ser. No. 250,745

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.³ B01J *13/00*; C08L *31/04, 33/08*

U.S. Cl. 252—312 **15 Claims**

1. A non-aerosolized preparation in the form of a water dispersion for providing an uninterrupted, continuous film consisting essentially of an active ingredient from the class consisting of water soluble and water insoluble compositions, said water insoluble compositions being initially non-pre-emulsified, a dispersal agent consisting of cocodiethanolamide within a range of 2.5% to 10% by weight of the preparation, said cocodiethanolamide being an amber liquid having a congealing point of approximately 6 degrees C., a specific gravity at 25 degrees C. of about 0.99, containing a maximum of about 3–14 percent free or unreacted fatty acid (as lauric acid) and having a pH value of 8–9 as a one percent dispersion in water, and being soluble in alcohols, glycols, ketones, esters, aromatic and aliphatic hydrocarbons, and chlorinated solvents, and also being dispersible in water at low concentrations of 1% to 2%, said active ingredient being within a range of approximately 0.05% to 80% by weight of the preparation, any requisite balance of said preparation being water, said preparation being non-emulsified.

4,439,345

DEMULSIFICATION OF A CRUDE OIL MIDDLE PHASE EMULSION

Roy B. Duke, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jun. 11, 1981, Ser. No. 272,621

Int. Cl.³ B01D *17/04*

U.S. Cl. 252—330 **15 Claims**

1. A process for the demulsification of a middle phase emulsion of a crude oil emulsion produced by a surfactant flood comprising contacting the middle phase emulsion with a water-soluble alkali metal hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide in an amount sufficient to cause demulsification of the emulsion.

9. A process for the demulsification of a middle phase emulsion of a crude oil produced by a surfactant flood comprising:

(a) contacting the middle phase emulsion with a water-soluble metal hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide in an amount of from about 0.05 to about 5 weight percent based on volume of middle phase emulsions;

(b) heating the mixture of step (a) to a temperature of from about 75° F. to about 400° F. and allowing the mixture to separate into phases wherein one of the phases is an oil phase;

(c) separating the oil phase;

(d) contacting the oil phase of step (c) with an acid selected from the group consisting of a carboxylic acid selected from the group consisting of tartaric, mucic, citric, ethylenediaminetetraacetic, nitrilotriacetic, gluconic, lactic, glycolic and acetic acid and amine salts of said carboxylic acids; sulfuric and phosphoric acid in order to obtain a pH of less than about 8 and allowing the mixture to separate into phases wherein one phase is an oil phase; and

(e) separating the oil phase from the mixture of step (d).

4,439,346

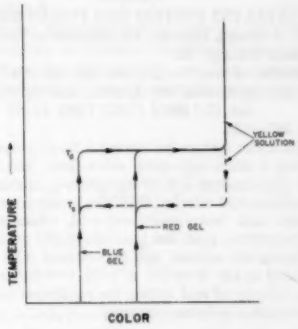
POLYDIACETYLENE GELS

Gordhanbhai N. Patel, Morris Plains, and Dawn M. Ivory, Randolph, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1978, Ser. No. 938,292

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—408.1 **12 Claims**



1. A composition consisting essentially of (A) at least one polydiacetylene selected from the group consisting of 1,4 addition polymers of conjugated diacetylene monomers having the formula $R—C{\equiv}C—C{\equiv}C—R^1$ wherein R and R^1 are urethane groups independently selected from

(I):—$(CH_2)_n$—O—CONH—CH_2—COOA, where n is an integer of 1–10 and A is C_1–C_{10} linear or branched alkyl; and polymers of diacetylene monomers having said formula $R—C{\equiv}C—C{\equiv}C—R^1$ wherein R and R^1 are identical urethane groups selected from:

(II):—$(CH_2)_n$—O—CONHB wherein

(a) n is 2 and B is ethyl, n-butyl or m-chlorophenyl; or

(b) n is 3 and B is methyl, ethyl, phenyl or m-tolyl; or

(c) n is 4 and B is methyl, ethyl, 2-chloroethyl, o-chlorophenyl, p-chlorophenyl, n-butyl or m-methoxyphenyl;

said composition also consisting essentially of (B) a liquid capable of forming a gel with said polydiacetylene and of forming a solution of said polydiacetylene upon elevation of the temperature of the gel to at least the dissolution temperature, said gel containing about 0.001 to 50 weight percent of said polydiacetylene, and said solution having a different color from that of said gel and being capable of reversibly reforming the gel in its original color upon cooling to the gelation temperature; said liquid being at least one member of the group consisting of linear or branched C_5–C_{10} paraffinic hydrocarbons, linear or branched C_1–C_5 halogenated alkanes containing 1–4 halogen atoms, C_2–C_4 linear or cyclic alkyl sulfoxides, C_4–C_6 cyclic sulfones, C_2–C_7 N,N-dialkylalkanoamides, C_6–C_{10} aromatic hydrocarbons, C_6–C_{10} halogenated aromatic hydrocarbons containing 1 to 4 halogen atoms, C_4–C_6 linear or cyclic mono-or diethers, C_2–C_4 alkanoic acid and ethyl esters therof, C_3–C_6 linear alkyl ketones and C_2–C_4 halogenated alkanoic acids containing 1 to 3 halogen atoms.

4,439,347

PHOTOMETRIC ACCURACY AND LINEARITY TEST SOLUTION

Lilla S. Sun, Seal Beach, and John C. Anderson, Burbank, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 15, 1981, Ser. No. 330,974

Int. Cl.³ G01N *31/00, 33/00*; G01D *18/00*; G01B *13/00*

U.S. Cl. 252—408.1 **3 Claims**

1. A solution of the type comprising cobalt ammonium sulfate and sulfuric acid, characterized in that said sulfuric acid is present therein in an amount from about 0.020 to about 0.040 N.

4,439,348

CATALYST SYSTEM FOR FURAN RESINS

Denis W. Akerberg, Huntley, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 255,586, Apr. 20, 1981, abandoned. This application Feb. 5, 1982, Ser. No. 346,353

Int. Cl.³ B01J *31/02*; C08L *61/04*

U.S. Cl. 252—426 **2 Claims**

1. A catalytic system for curing a furan polymer concrete comprising a silica aggregate, silica flour, and a furan resin wherein said catalyst system comprises a mixture of an aromatic sulfonic acid selected from the group consisting of phenolsulfonic acid, benzenesulfonic acid, toluenesulfonic acid, and xylenesulfonic acid, and urea salt of said aromatic sulfonic acid, wherein the sulfonic acid is combined with urea salt in a ratio of acid to salt from 1/1 to 1/10, thereby controlling the catalytic activity of said system for regulation of the working life of said furan polymer concrete.

4,439,349

MESOPOROUS CARBONS

Douglas H. Everett, 35 Downleaze, Bristol, BS9 LLX; Stephen G. Bligh, 33 Tennyson Ave., Twickenham, Middlesex, TWI 4QX, and Fernando Rojas, Flat 8, Sinclair House, Clifton Rd., Bristol 8, all of England

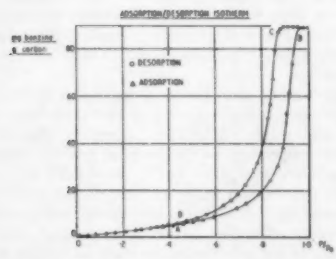
PCT No. PCT/GB81/00076, § 371 Date Dec. 28, 1981, § 102(e) Date Dec. 28, 1981, PCT Pub. No. WO81/03167, PCT Pub. Date Nov. 12, 1981

PCT Filed Apr. 28, 1981, Ser. No. 336,396

Claims priority, application United Kingdom, Apr. 28, 1980, 8013932

Int. Cl.³ B01J *21/18*; C01B *31/02*

U.S. Cl. 502—180 **12 Claims**



1. An adsorbant carbon comprising a form-stable assembly of a family of contiguous carbon particles wherein the surfaces of adjacent contiguous particles define interstitial pores characterised in that

(a) the maximum diameters of at least 90% by number of the particles of the family lie in the range 8 to 3000 nm,

(b) the root mean square deviation of the maximum diameters of the particles of the family is less than 15% and Ser. No. 336,396 - Everett et al.

(c) in at least one section of the adsorbant carbon, particles are cubic or hexagonal close packed to an extent that the volume of interstitial pores in said section is from 18 to 40% of the volume of said section.

5. A method for making adsorbant carbon characterised in that

(a) a colloidal dispersion of a family of spheroidal particles of carbonisable organic polymer is formed in a liquid wherein the maximum diameters of at least 90% by number of the particles of the family lie in the range 10 to 3500 nm and the root mean square deviation of those maximum diameters within a family is less than 15%.

(b) the particles are caused to deposit from the liquid by a packing force exerted on them,

(c) the deposited particles are heated to a temperature which is below the softening point of the polymer but which is high enough to cause at least partial degradation of the polymer and thereby create a form-stable assembly of particles and

(d) the form-stable assembly is heated to ensure complete carbonisation of the polymer.

4,439,350

CONTACT STRUCTURE FOR USE IN CATALYTIC DISTILLATION

Edward M. Jones, Jr., Friendswood, Tex., assignor to Chemical Research & Licensing Company, Houston, Tex.

Filed Jun. 21, 1982, Ser. No. 390,395

Int. Cl.³ B01J *35/04*

U.S. Cl. 502—527 **9 Claims**

1. A contact catalyst structure comprising a plurality of porous closed containers, containing therein solid particulate catalyst and clip means, for holding and spacing said containers as a unit for disposition above a distillation tray of a distillation column, said clip means comprising at least one structure comprising a base member and a plurality of resilient pairs of members extending substantially perpendicular therefrom for grasping and holding said containers, one each between each of said pair of resilient members.

4,439,351

USE OF ANIONIC OR CATIONIC POLYMERS TO LOWER THE ELECTRICAL RESISTIVITY OF FLY ASH

Rabindra K. Sinha, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Jul. 6, 1982, Ser. No. 395,390

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—500 **10 Claims**

1. A process for lowering the electrical resistivity of fly ash comprising adding a cationic polymer, selected from the group consisting of polymers made from dimethyldiallyl ammonium chloride, ethyleneamine, methacrylamido propyl trimethyl ammonium chloride, 2-methacryloyloxyethyl trimethyl ammonium chloride, 2-methacryloyloxyethyl trimethyl ammonium methosulfate and diquaternary ionene, or an anionic polymer, selected from the group consisting of polymers made from acrylic acid, methyacrylic acid, vinyl acetic acid, crotonic acid, allylacetic acid, 4-methyl-4 pentonic acid, vinyl sulfonate, styrene sulfonate and acrylamido methyl propane sulfonic acid or selected from the group of anionic copolymers made by combining any of the above listed anionic monomers with acrylamide, vinyl acetate, styrene, butadiene or vinyl pryrolidone, to the fly ash.

4,439,352

RESISTOR COMPOSITIONS AND RESISTORS PRODUCED THEREFROM

Eiichi Asada, Tokyo; Toshio Inokuma, Fujisawa, and Hiroyuku Saito, Oume, all of Japan, assignors to Shoei Chemical Inc., Tokyo, Japan

Filed Dec. 1, 1982, Ser. No. 446,084
Claims priority, application Japan, Dec. 29, 1981, 56-210207; Oct. 1, 1982, 57-173708
Int. Cl.³ A01B 1/06
U.S. Cl. 252—518 11 Claims

1. A composition adapted to form a resistor by coating said composition onto an electrically insulating substrate and firing the coated substrate, which consists essentially of (a) ruthenium oxide; (b) glass; (c) at least one metal oxide selected from the group consisting of lanthanum oxide, neodymium oxide, praseodymium oxide and samarium oxide; and (d) a liquid organic vehicle, wherein the weight ratio of said ruthenium oxide (a) to said glass (b) is in the range of 30:70 to 5:95 and the total amount of said metal oxide (c) is in the range of 0.05 to 7 parts by weight per 100 parts by combined weight of said ruthenium oxide (a) and said glass (b), said composition being in the form of finely divided particles dispersed in said vehicle (d).

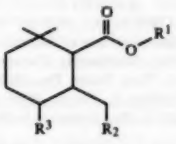
4,439,353

ESTERS OF SUBSTITUTED 2,2-DIMETHYLCYCLOHEXANOIC ACID

Hanspeter Schenk, Zumikon, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed Dec. 1, 1981, Ser. No. 326,443
Claims priority, application Switzerland, Dec. 10, 1980, 9103/80; Oct. 14, 1981, 6573/81
Int. Cl.³ C07C 69/75; C11B 9/00
U.S. Cl. 252—522 R 12 Claims

1. A compound of the formula



I

wherein:

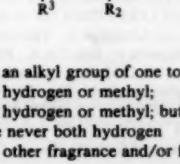
R^1 represents an alkyl group of one to four carbons;

R^2 represents hydrogen or methyl;

R^3 represents hydrogen or methyl; but

R^2 and R^3 are never both hydrogen.

9. A fragrance and/or flavoring composition comprising an effective amount of a compound of the formula



I

wherein:

R^1 represents an alkyl group of one to four carbons;

R^2 represents hydrogen or methyl;

R^3 represents hydrogen or methyl; but

R^2 and R^3 are never both hydrogen

and at least one other fragrance and/or flavoring substance.

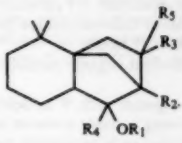
4,439,354

TRICYCLIC ALCOHOLS, ETHERS AND ESTERS, PROCESS FOR PREPARING SAME AND USE THEREOF IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERITES OF CONSUMABLE MATERIALS

Kenneth K. Light, N. Ogden, Utah; Joseph A. McGhie, Montclair, N.J.; Futoshi Fujioka, Wanamassa, N.J., and Takao Yoshida, West Long Branch, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 206,649, Nov. 13, 1980. This application Oct. 13, 1981, Ser. No. 311,291
The portion of the term of this patent subsequent to Oct. 25, 2000, has been disclaimed.
Int. Cl.³ C07C 49/453
U.S. Cl. 252—522 R 14 Claims

1. A process for augmenting or enchancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of at least one tricyclic compound having the structure:



wherein R_1 represents hydrogen, methyl or acetyl and wherein R_2, R_3, R_4 and R_5 may be the same or different and each is hydrogen, methyl or ethyl.

4,439,355

ELASTIC DETERGENT PRODUCT OF IMPROVED FOAMING POWER AFTER USE

Divaker B. Kenkare, South Plainfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 746,998, Dec. 2, 1976, Pat. No. 4,207,198. This application Jan. 17, 1980, Ser. No. 112,730
The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.
Int. Cl.³ C11D 17/00
U.S. Cl. 252—541 13 Claims

1. A hand squeezable, elastic, solid molded detergent product of improved form-retaining ability and foaming power after use, which is sufficiently elastic so that a 2 centimeter thickness thereof can be pressed between a thumb and forefinger to a 1 cm. thickness and upon release of such pressure will return within five seconds to within 1 mm. of the 2 cm. thickness, which comprises about 10 to 70% of an organic detergent or mixture of such detergents selected from the group consisting of ammonium and lower alkanolammonium anionic organic detergent salts and mixtures of such anionic organic detergent(s) and amphoteric synthetic organic detergent(s), about 8 to 35% of gelatin and about 20 to 65% of a lower pluralhydric alcohol selected from the group consisting of lower di- and polyhydric alcohols and mixtures thereof, and which is substantially free of water.

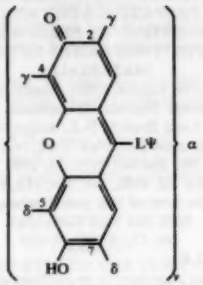
4,439,356

UNSYMMETRICAL FLUORESCEIN DERIVATIVES

Pyare Khanna, San Jose, and Warren Colvin, Redwood City, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Mar. 3, 1981, Ser. No. 240,031
Int. Cl.³ A61K 39/385, 39/44; C07G 7/00
U.S. Cl. 260—112 R 22 Claims

1. A compound of the formula



wherein:

one of the γs will be of the formula —$(O)_\epsilon\rho$ and the other is δ;

wherein ε is 0 or 1 and ρ is an aliphatic group of from about 1 to 12 carbon atoms and 0–1 carboxyl groups;

the δ's are the same or different and are hydrogen or halogen of atomic number 17 to 80;

L is a bond or divalent organic radical of up to 20 carbon atoms;

α may be taken together with Ψ to define an active group capable of forming a stable covalent bond with carbon, nitrogen or oxygen or is an organic compound, and is at other than the ortho position when L is benzene and Ψ and α are taken together to define carboxy;

Ψ, when not taken together with α is a linking group to α;

ν is 1 when Ψ is taken together with α and is otherwise on the average at least 1 and not more than the molecular weight of α divided by 500.

with the proviso that when ε is 0, one of the δ's may be an aliphatic group of from about 1 to 12 carbon atoms asymmetrically substituted in relation to ρ.

4,439,357

PROCESS FOR OBTAINING HEPATITIS-SAFE, STERILE HEMOGLOBIN SOLUTIONS FREE OF PYROGENS AND STROMA

Klaus Bonhard, Hanau; Bertram Eichentopf, Bad Soden, and Norbert Kothe, Kronberg, all of Fed. Rep. of Germany, assignors to Biotest-Serum-Institut GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 404,197

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130770

Int. Cl.[3] **A61K** *35/18, 37/02;* **C07G** *7/00;* **C07C** *103/52*

U.S. Cl. 260—112 B **7 Claims**

1. A process for obtaining hepatitis-safe, sterile, pyrogen- and stroma-free hemoglobin solutions of low potassium content comprising stirring an erythrocyte concentrate with about 1 to 6-times its volume of an about 5 to 15% aqueous solution of a sugar, sugar alcohol or high-molecular-weight colloid, adJusting the pH of the resulting suspension to about 5 to 6.5 with an acid which is physiologically tolerable as salt, allowing the erythrocytes to settle, removing the supernatant from the sediments, adjusting the pH of the sediment to about 7 to 8, homogenizing the sediment, adjusting its hematocrit to about 55 to 60%, treating the mass with a dilute beta-propiolactone solution, hemolyzing the residual solids and forming a suspension thereof, contacting the suspension with a cation exchanger in H^+ form until the pH has decreased to about 5 to 5.5 thereby to precipitate the stroma, separating from the liquid the cation exchanger and precipitated stroma, and adjusting the pH to about 7.2 to 7.6.

4,439,358

METHOD OF PREPARING ALPHA-1-PROTEINASE INHIBITOR

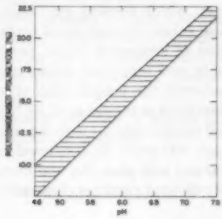
Michael H. Coan, El Cerrito, and William J. Brockway, San Leandro, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 389,202, Jun. 17, 1982, Pat. No. 4,379,087. This application Jan. 27, 1983, Ser. No. 461,422

The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.

Int. Cl.[3] **C07G** *7/00*

U.S. Cl. 260—112 B **19 Claims**



1. A method for separating alpha-1-proteinase inhibitor from a blood plasma fraction containing the same, which comprises the steps of

(a) holding an aqueous solution of the blood plasma fraction at a pH of about 6.5–8.5, and a temperature of about 2°–50° C. for a period of about 0.2–24 hours,

(b) mixing the solution with a polycondensed polyglycol and adjusting the pH of the mixture to selectively precipitate unwanted proteins from the solution without precipitation of alpha-1-proteinase inhibitor, the amount of polycondensed polyglycol and the pH of the mixture being determined according to FIG. 1, and

(c) separating alpha-1-proteinase inhibitor from the solution.

4,439,359

CYCLIC OCTAPEPTIDE ANALOGS OF NEUROTENSIN

Frederick W. Holly, deceased, late of Glenside, Pa. (by Evelyn H. Holly, executrix); Marcia E. Christy, Perkasie, Pa.; Kenneth L. Shepard, West Point, Pa.; Robert G. Strachan, Warrington, Pa.; Sandor L. Varga, Harleysville, Pa., and Daniel F. Veber, Ambler, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 2, 1982, Ser. No. 394,750

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **6 Claims**

1. A cyclic octapeptide having the formula

Cyclo(D-Lys-Pro-B-B-Pro-C-Ile-Leu) (I)

wherein:

B is a basic amino acid residue selected from the group consisting of 2,4-diamino butyric acid, lysine, arginine, ornithine, and homoarginine; and

C is tyrosine, or tryptophane.

4,439,360

RETRO-INVERSO ANALOGUES OF C-TERMINAL PENTA AND HEXAPEPTIDES OF SUBSTANCE P

Antonio S. Verdini, and Giuseppe C. Viscomi, both of Monterotondo, Italy, assignors to Anic S.p.A., Palermo, Italy

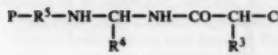
Filed Dec. 10, 1982, Ser. No. 448,832

Claims priority, application Italy, Dec. 22, 1981, 25753 A/81

Int. Cl.[3] **C07C** *103/52;* **A61R** *37/00*

U.S. Cl. 260—112.5 R **20 Claims**

1. Compounds of general formula (I):



(I)

in which

P is hydrogen, a linear or branched aliphatic alkyl group of 1–6 carbon atoms, or a saturated or unsaturated linear or branched chain aliphtic acyl group, such as formyl, acetyl, propionyl, n-butyryl, isobutyryl, n-valeryl, isovaleryl, hexanoyl, isohexanoyl, heptanoyl, octanoyl, crotonoyl, methacryloyl, acryloyl; or a substituted acyl group such as hydroxyacetyl, 2-hydroxypropionyl, 3-hydroxypropionyl, aminoacetyl, 4-hydroxyphenylacetyl, 4-hydroxyphenylpropionyl, 2-aminopropionyl, 3-aminopropionyl, 0-ethylmalonyl, ethoxyformyl, methoxyacetyl, 3-methoxypropionyl, 3-ethoxypropionyl, chloroacetyl, dichloroacetyl, 2-chloropropionyl, 3-chloropropionyl, 2,3-dichloropropionyl, bromoacetyl, 4-hydroxy-3,5-diiodophenylacetyl, 3-oxobutyryl, 3-oxovaleryl, 4-oxovaleryl, methylthioacetyl, 3-methylthiopropionyl, ethylthioacetyl, 3-ethylthiopropionyl, nicotinoyl, γ aminobutyryl, N^{α}-[1-(9-adenyl)-β-D-ribofuranuronosyl], N^{α}-[1-(9-hypoxanthyl)-β-D-ribofuranuronosyl]; or a group such as benzyloxycarbonyl, tert-butyloxycarbonyl, tert-amyloxycarbonyl, isobornyloxycarbonyl, adamantyloxycarbonyl, chloro or nitro-substituted benzyloxycarbonyl;

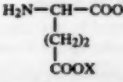
R^1 is a residue of methionine sulphoxide, methionine sulphone, selenomethionine, leucine, norleucine, valine or norvaline;

R^2 is a residue of leucine, norleucine, valine, norvaline, alanine or isoleucine;

R^3 is hydrogen or methyl;

R^4 is the side-chain of aminoacids such as phenylalanine, tryptophan, tyrosine, valine, norvaline, leucine, norleucine, isoleucine, serine or derivatives, threonine or derivatives, histidine or derivatives, methionine, S-methyl methionine, methionine sulphone, arginine or derivatives, lysine or derivatives, ornithine or derivatives, 2,4-diaminobutyric acid or derivatives, 2,3-diaminopropionic acid or derivatives, glutamic acid or aspartic acid or their suitable derivatives;

R^5 is a peptide fragment containing 1 or 2 aminoacid residues which constitutes the quintultimate and sextultimate residue from the carboxyamide end, and of which the quintultimate can be: phenylalanine, tyrosine, 4-chlorophenylalanine, 0-benzyltyrosine (or their acetyl, cyclopentyl, tert-butyloxycarbonyl or 4-hydroxyphenylacetyl derivatives) or glycine; and the sextultimate can be: glutamine, pyroglutamic acid, alanine, tyrosine, lysine or derivatives, proline, N-formyl-proline, β-alanine, N-acetyl-β-alanine, glycine, desaminophenylalanine, desaminoglutamine, desaminoaspartic acid, γ-methyldesaminoaspartic acid, or γ-esters of glutamic acid represented by the general formula (II)



in which X is methyl, ethyl, methoxyethyl, methoxy (ethoxy)$_n$ ethyl where n=1, 2, 3, or their tert-butyloxycarbonyl derivatives.

4,439,361

PROCESS FOR CONTROLLING DIAZOTIZATION REACTIONS INVOLVING NITROUS REACTANT BY TESTING THE AIR ABOVE THE REACTION BATCH FOR ITS CONTENT OF NITROUS GASES AND FEEDING NITROUS REACTANT IN ACCORDANCE WITH SAID CONTENT

Kurt Karrenbauer; Hartmut Behringer, both of Erftstadt, and Heinrich Rehberg, Hürth-Hermülheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,487

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104375

Int. Cl.³ C07C *113/04*

U.S. Cl. 260—141 **11 Claims**

1. A process for controlling diazotization reactions, which comprises: vigorously agitating a reaction batch containing an aromatic amine and nitrous acid, and thereby continuously renewing the surface area of the batch; exhausting the air above said surface area at a constant rate; testing the exhausted air for its content of nitrous gases originating from partially decomposed nitrous acid; and supplying nitrous acid or dissolved matter forming nitrous acid under the reaction conditions to the feed amine in the proportions necessary to provide for a content between 5 and 300 ppm nitrous gases in the exhausted air.

4,439,362

AZO COMPOUNDS HAVING ONE OR TWO 1,4-DIOXANYLMETHOXYCARBONYL-ALKYL OR -ALKOXYALKYL GROUPS

Klaus Koerte, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

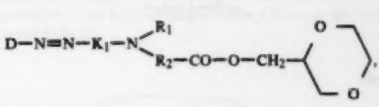
Filed Jul. 7, 1977, Ser. No. 813,485

Claims priority, application Switzerland, Jul. 12, 1977, 8904/76

Int. Cl.³ C09B *29/36, 31/14*; D06P *3/26, 3/54*

U.S. Cl. 260—152 **7 Claims**

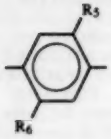
1. A compound of the formula



wherein

D is substituted thienyl having 1to 3 substituents, each of which is independently chloro, bromo, nitro, cyano, methyl, phenyl, (C_{1-2}alkyl)carbonyl or (C_{1-2})alkoxy)carbonyl, with the proviso that the maximum number of any one member of the group consisting of chloro, bromo, nitro, cyano and methyl is two and the maximum number of any one member of the group consisting of phenyl, (C_{1-2}alkyl)carbonyl and (C_{1-2}alkoxy)carbonyl is one; thiazolyl; benzothiazolyl; benzoisothiazolyl; substituted thiazolyl, substituted benzothiazolyl or substituted benzoisothiazolyl having 1 or 2 substituents each of which is independently chloro, bromo, nitro, cyano, methyl, thiocyano, sulfamoyl or C_{1-2}alkylsulfonyl, with the proviso that the maximum number of any one member of the group consisting of methyl, thiocyano, sulfamoyl and C_{1-2}alkylsulfonyl is one; 5-phenyl-1,3,4-thiadiazolyl-2 or 4-phenyl-1,3,5-thiadiazolyl-2,

K_1 is



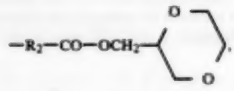
or 1,4-naphthylene,

wherein

R_5 is hydrogen, chloro, bromo, methyl, methoxy or ethoxy, and

R_6 is hydrogen, chloro, bromo, methyl, methoxy, ethoxy, (C_{1-2}alkyl)carbonylamino or chloroacetamido,

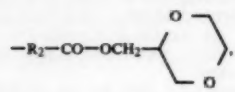
R_1 is hydrogen; C_{1-4}alkyl; C_{2-4}alkenyl; C_{2-4}alkyl or C_{2-4}alkenyl monosubstituted by chloro, bromo, hydroxy, cyano, C_{1-4}alkoxy, phenoxy, phenyl, formyloxy, (C_{1-4}alkyl)carbonyloxy, benzoyloxy, (C_{1-4}alkoxy)carbonyl, (C_{1-4}alkoxy)carbonyloxy, (C_{1-4}alkyl)carbamoyloxy or di-(C_{1-4}alkyl)carbamoyloxy or



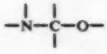
with the proviso that R_1 is hydrogen, C_{1-4}alkyl or C_{2-4}alkenyl when K_1 is 1,4-naphthylene, and

each

R_2 is C_{1-4}alkylene or C_{2-4}alkylene-O-C_{2-4}alkylene, with the proviso that when R_1 is



the two R_2's are identical, with the proviso that the molecule is free of



radicals.

4,439,363

ACETYLMETHYL ESTER OF HETACYLLIN AND/OR SALTS OF THIS ESTER

Wojciech A. Gruszecki, Gdansk; Irena M. Busko-Oszczopowicz, Warsaw; Maria Gdulewicz-Gruszecka, Gdansk; Jerzy J. Cieslak, Warsaw; Edward Borowski, Gdansk, and Teresa Gumiezna, Warsaw, all of Poland, assignors to Politechnika Gdanska, Gdansk and Instytut Przemyslu Farmaceutycznego Majakowskiego, Warsaw, both of, Poland

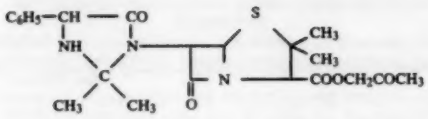
Continuation of Ser. No. 158,399, Jun. 11, 1980, abandoned. This application Feb. 25, 1982, Ser. No. 352,118

Claims priority, application Poland, Jun. 20, 1979, 216450

Int. Cl.³ C07D *499/46*; A61K *31/43*

U.S. Cl. 260—239.1 **2 Claims**

1. An acetylmethyl ester of hetacyllin of the formula:



and the non-toxic, pharmaceutically acceptable salts thereof.

4,439,364

PROCESS FOR PREPARING ANTIHYPERTENSIVE 1-SUBSTITUTED CYCLIC LACTAM-2-CARBOXYLIC ACIDS AND THEIR DERIVATIVES

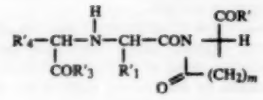
Alexander L. Johnson, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Sep. 1, 1982, Ser. No. 413,786

Int. Cl.³ C07D *223/10*

U.S. Cl. 260—239.3 R **4 Claims**

1. A process for preparing compounds of the formula:



where

R' is OX, C_1–C_4 alkoxy or benzyloxy;

R_1' is H, CH_3, C_2H_5, CF_3, isobutyl, isoamyl, $-(CH_2)_n-N-R_5-X^1$ or $-(CH_2)_pNH-C(=NH)NH-X^2$;

R_3' is OX^3, C_1–C_4 alkoxy or benzyloxy;

R_4' is C_1–C_{10} alkyl, $-(CH_2)_qC_6H_5$ or $-(CH_2)_rNH-X^4$;

R_5 is H or C_1–C_4 alkyl;

m is 2, 3 or 4;

n is an integer from 1–6;

p is an integer from 1–6;

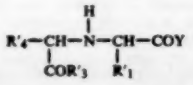
q is an integer from 0–6;

r is an integer from 1–6; and

X, X^1, X^2, X^3 and X^4 are protective groups;

consisting essentially of coupling an anion of the formula

with an amino-diacid of the formula



where Y is a carboxyl-activating group.

4,439,365

NOVEL HYDROXY SUBSTITUTED PROSTANOIC ACIDS, ESTERS, CONGENERS, INTERMEDIATES AND PROCESS

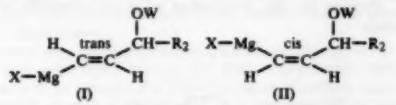
Middleton B. Floyd, Jr., Suffern, N.Y.; Martin J. Weiss, Oradell, N.J.; John F. Poletto, Nanuet, N.Y.; Robert E. Schaub, Upper Saddle River, and Karel F. Bernady, Belle Mead, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 922,285, Jul. 6, 1978, which is a division of Ser. No. 806,871, May 30, 1978, which is a continuation-in-part of Ser. No. 540,052, Jan. 10, 1975, which is a division of Ser. No. 355,349, Apr. 7, 1973, Pat. No. 3,873,607, which is a division of Ser. No. 274,768, Jul. 24, 1972. This application Jul. 18, 1979, Ser. No. 58,415

Int. Cl.³ C09B *11/06*

U.S. Cl. 260—395 3 Claims

1. A compound selected from the group consisting of those of the formulae:



(I) (II)

wherein W is selected from the group consisting of triphenylmethyl, X is selected from the group consisting of chloro and bromo; and R_2 is selected from the group consisting of a straight chain alkyl group having from 2 to 10 carbon atoms, a straight chain alkyl group having from 2 to 10 carbon atoms, and substituted with an alkyl group having from one to three carbon atoms, a straight chain alkenyl group having from 2 to 10 carbon atoms and substituted with one or two alkyl groups having between them 2 to 5 carbon atoms, and a straight chain alkynyl group having from 2 to 10 carbon atoms.

4,439,366

DERIVATIVES OF CHENODEOXYCHOLIC ACID

Carlo Scolastico, Vallisneri St., 13 B-Milan; Cesare Sirtori, Bossi St., 1 Milan, both of Italy, and David Kritchevsky, 36 St. at Spruce, Philadelphia, Pa. 19105

Filed Jun. 28, 1982, Ser. No. 392,891

Claims priority, application Italy, Jul. 24, 1981, 23109 A/81

Int. Cl.³ C07J *13/00*

U.S. Cl. 260—397.1 1 Claim

1. The compound 7-oleyl chenodeoxycholic acid.

4,439,367

Patent Not Issued For This Number

4,439,368

ONE SOLVENT PROCESS FOR PREPARATION OF ESTERS OF 3,5-DIBROMO-4-HYDROXYBENZONITRILE

Richard E. Sheads, Durham, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1982, Ser. No. 426,705

Int. Cl.³ C07C *121/75*

U.S. Cl. 260—404 12 Claims

1. A method of preparing esters of 3,5-dibromo-4-hydroxybenzonitrile from 4-cyanophenol which comprises:

(a) reacting said 4-cyanophenol with a reactant(s) selected from the group consisting of bromine; bromine and chlorine; and preformed bromine chloride;

(b) sequentially reacting the 3,5-dibromo-4-hydroxybenzonitrile intermediate so formed with an acid halide selected from the group consisting of an aliphatic, cycloaliphatic and aromatic acid halide; and

(c) conducting both of the above process steps in a single, halogenated alkane reaction medium.

4,439,369

HALOGENATED, TERTIARY DIISOCYANATES AND THEIR PREPARATION

Karl-Heinz Koenig, Frankenthal, and Volker Schwendemann, Wiesenbach, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,090

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102089

The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.

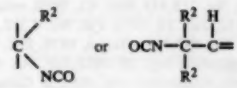
Int. Cl.³ C07C *118/00, 119/045*

U.S. Cl. 260—453 P 8 Claims

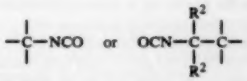
1. A process for the preparation of a halogenated, tertiary diisocyanate of the formula I

I

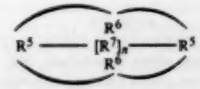
where n is 0 or 1 and the individual radicals R^1 are identical or different and, if n is 0, are



or, if n is 1, are



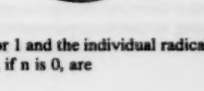
the individual radicals R^2 are identical or different and are aliphatic radicals, or two adjacent radicals R^2 linked by a carbon atom can be members of a halogen-free or halogenated alicyclic ring, and the individual radicals R^3 and R^4 can be identical or different and are aliphatic radicals, the end product having more halogen atoms than the starting material II, by halogenation of an isocyanate, wherein a tertiary diisocyanate of the formula II



II

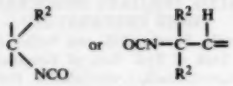
where R^5 has the meanings of R^1, R^6 has the meanings of R^4 and R^7 has the meanings of R^3, the above radicals overall having a smaller number of halogen atoms than R^1, R^4 and R^3 or being halogen-free, is reacted with halogen, sulfuryl chloride and/or sulfuryl bromide.

2. A halogenated tertiary diisocyanate of the formula I

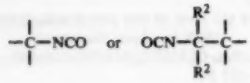


I

where n is 0 or 1 and the individual radicals R^1 are identical or different and, if n is 0, are



or, if n is 1, are



the individual radicals R^2 are identical or different and are aliphatic radicals, or two adjacent radicals R^2 linked by a carbon atom can be members of a halogen-free or halogenated alicyclic ring, and the individual radicals R^3 and R^4 can be identical or different and are aliphatic radicals.

4,439,370

PREPARATION OF TRANS CYCLOHEXANE 1,4-DIISOCYANATE

Hans Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 215,415, Dec. 11, 1980, which is a division of Ser. No. 49,112, Jun. 18, 1979, Pat. No. 4,275,223, which is a division of Ser. No. 883,949, Mar. 6, 1978, Pat. No. 4,203,916. This application Sep. 20, 1982, Ser. No. 420,184

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710595

Int. Cl.³ C07C *118/00, 119/045*

U.S. Cl. 260—453 P **1 Claim**

1. A process for preparing a trans-cyclohexane-1,4-diisocyanate which comprises reacting ammonia with cyclohexane-1,4-dicarboxylic acid, a lower alkyl ester, an oligomeric ester or a polyester thereof or a mixture of such compounds at an ammonia partial pressure of from 0.1 to 50 bars in a polyhydric alcohol at from about 25° C. to about 200° C., separating the resulting solid dicarboxylic acid diamide from the reaction mixture, freeing the said solid diamide from water soluble constituents adhering thereto, suspending the resulting solid diamide in an aqueous mineral acid or in water, reacting the chloramide in aqueous dimethyl formamide containing an alkali metal hydroxide with a primary sulphonamide to form a trans-cyclohexane-1,4-sulphonyl urea, and heating said trans-cyclohexane-1,4-sulphonyl urea to form trans-cyclohexane-1,4-diisocyanate.

4,439,371

METHOD FOR PREPARING PHTHALONITRILES

Ramiz G. K. O. Rizaev, ulitsa Sharif-Zade, 148, kv. 67; Mirabdulla M. O. Mirataev, ulitsa Patrisa Lumumby, 59 blok 1, kv. 20; Viktor E. Sheinin, ulitsa Pervomaiskaya, 251, kv. 28; Zemfira J. K. Magerramova, ulitsa Chicherina, 6, kv. 11; Jury N. Litvishkov, ulitsa 28 Aprelya, 11, kv. 38; Sekher G. K. Guseln-Zade, ulitsa Basina, 53, kv. 42; Tofik S. O. Farzullaev, ulitsa B.Avakiana, 55, kv. 10, and Nazaket M. K. Ilyasova, Moskovsky prospekt, 95a, kv. 39,, all of Baku, U.S.S.R.

Filed Mar. 9, 1981, Ser. No. 247,537

Int. Cl.³ C07C *120/14*

U.S. Cl. 260—465 C **3 Claims**

1. A method for preparing phthalonitriles by oxidative ammonolysis of xylene at a temperature within the range of from 340° to 480° C. in the presence of a catalyst containing oxides of antimony, bismuth, vanadium, or molybdenum deposited onto an inert carrier, characterized in that a catalyst is used additionally containing ferric oxide, the components being present in the following proportions, percent by weight:

antimony oxide: 1–25
bismuth oxide: 1–20
vanadium oxide or molybdenum oxide: 0.2–15
ferric oxide: 0.1–25
carrier: the balance.

4,439,372

PROCESS FOR THE PREPARATION OF STYRYL DYESTUFFS

Herbert Hugl, Bergisch-Gladbach; Gerhard Wolfrum, Leverkusen, and Klaus-Friedrich Lehment, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

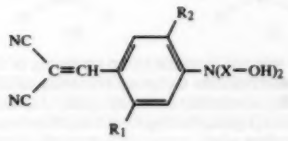
Filed Jun. 28, 1982, Ser. No. 392,493

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128159

Int. Cl.³ C07C *121/80*

U.S. Cl. 260—465 E **12 Claims**

1. Process for the preparation of styryl dyestuffs of the formula

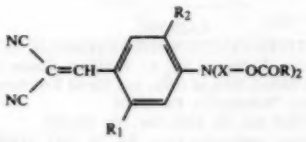


(I)

in which

R_1 and R_2 denote hydrogen, alkyl, alkoxy or halogen and

X denotes an alkylene radical, characterised in that compounds of the formula



(II)

in which

X, R_1 and R_2 have the meaning indicated for formula (I) and

R denotes alkyl or aryl,

are hydrolysed by means of mineral acid to give compounds of the formula (I) and the latter are isolated.

4,439,373

PROCESS FOR PREPARING PHOSPHONOMETHYLATED AMINO ACIDS

Sreeramulu Naguhandi, Bedford Hills, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 27, 1982, Ser. No. 453,661

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.5 F **18 Claims**

1. A process for preparing phosphonomethylated amino acids comprising:

reacting a primary amino acid ester or salt with a carbon dioxide protecting group to form a protected amino compound;

phosphonomethylating said protected amino compound to obtain a phosphonomethylated protected amino compound; and

acidifying said phosphonomethylated protected amino compound to expel said carbon dioxide protecting group and yield a phosphonomethylated amino acid or acid derivative.

4,439,374
PROCESS FOR SULFONATING IMPURE ORTHO ALKYLPHENOL

Lester P. J. Burton, Pleasant Ridge, and Ronald L. Shubkin, West Bloomfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 28, 1982, Ser. No. 392,656
Int. Cl.³ C07C *143/44, 79/28*
U.S. Cl. 260—512 R **11 Claims**

1. In a process for sulfonating an impure o-alkylphenol to form a disulfonated o-alkylphenol, said process comprising reacting an impure o-alkylphenol with concentrated sulfuric acid, the improvement comprising adding about 0.001–0.5 weight percent of an aliphatic polybasic carboxylic acid having 2–12 carbon atoms or salt thereof to said o-alkylphenol whereby the ratio of disulfonated to monosulfonated o-alkylphenol is increased.

7. A process for making 2,4-dinitro-6-alkylphenol, said process comprising

(a) mixing about 0.001–0.5 weight percent of an aliphatic polybasic carboxylic acid or salt thereof with an impure o-alkylphenol,

(b) reacting said impure o-alkylphenol containing said polybasic carboxylic acid or salt with concentrated sulfuric acid in an amount of at least 2.0 moles of sulfuric acid per mole of said o-alkylphenol at a temperature of about 30°–150° C. to form sulfonated o-alkylphenol,

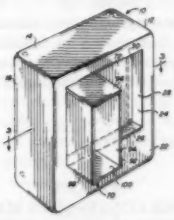
(c) reacting said sulfonated o-alkylphenol with a nitrating agent selected from the group consisting of nitric acid and salts thereof in an amount of at least 2.0 moles of nitrating agent per mole of said o-alkylphenol at a temperature of about 30°–150° C., and

(d) recovering a dinitro-o-alkylphenol product of high purity being substantially free of insoluble tar.

4,439,375
EVAPORATIVE COOLER APPARATUS

Robert L. Koble, Jr., Phoenix, Ariz., assignor to Phoenix Manufacturing, Inc., Phoenix, Ariz.

Filed Jul. 6, 1982, Ser. No. 395,099
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—29 **6 Claims**



1. Evaporative cooler apparatus, comprising, in combination:

relatively thin housing means, including

a front panel,

a back panel,

a pad means disposed in the back panel,

a sump for holding a quantity of water, and

water means for providing a flow of water through the pad means; and

blower module means adapted to be disposed in any one of a plurality of orientations, and including

a plate securable to the front panel in a plurality of orientations,

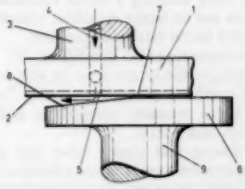
a blower secured to and supported by the plate for causing a flow of air through the pad means, and

an air nozzle asymmetrically secured to the front plate for receiving the flow of air from the blower and for directing the flow of air out of the housing means from different locations with respect to the housing means as the orientation of the plate is changed on the front panel.

4,439,376
FLOW PROPORTIONING DEVICE

Günter Härtel, Neuss, and Armin Schürfeld, Meerbusch, both of Fed. Rep. of Germany, assignors to Bosch & Pierburg System oHG, Neuss, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 384,992
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3123983
Int. Cl.³ F16K *3/32, 47/04*
U.S. Cl. 261—50 A **16 Claims**



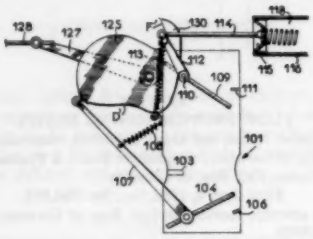
1. A proportioning device for controlling the flow of a fluid according to demand, said device comprising a disc shaped rotary slider mounted to rotate about a first axis, a planar slide face on said rotary slider and lying in a plane perpendicular to said first axis, a passage through said rotary slider for carrying the fluid flow to be controlled and terminating in a flow outlet in said slide face, a contoured disc mounted to rotate about a second axis parallel to said first axis, a planar contact face on said contoured disc and lying in a plane perpendicular to said second axis, said contact face being in abutting contact with said slide face, a relief-like contoured area on said contoured disc around said contact face and spaced axially from said flow outlet to define a free cross-sectional area which determines the flow of fluid from said outlet, said contoured area being shaped whereby rotation of either of said rotary slider and said contoured disc may vary the axial spacing between said contoured area and said flow outlet and hence vary said free cross-sectional area of flow, and positioning means for rotating said rotary slider and said contoured disc independently of each other.

11. A device as claimed in claim 1, in combination with a constant-pressure carburetor to control the flow of fuel from a float chamber of said carburetor for mixture with the air flow through a constant-pressure stage of said carburetor, said carburetor having a space in which said contoured disc is located, means communicating said space with said constant-pressure stage of said carburetor, and means which communicates said flow passage of said rotary slider with said float chamber whereby fuel can flow from said float chamber to said flow outlet in said slide face of said rotary slider, said positioning means for said contoured disc being connected to rotate said disc in correspondence with the throughput of air in said carburetor, and said positioning means for said rotary slider comprising an electric-motor driven member and electronic control apparatus therefor.

4,439,377
CARBURETOR FOR AN INTERNAL COMBUSTION MOTOR

Andre Nartowski, Marly le Roi, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Feb. 18, 1982, Ser. No. 349,902
Claims priority, application France, Mar. 3, 1981, 81 04185
Int. Cl.³ F02M 1/14
U.S. Cl. 261—52 **4 Claims**



1. A carburetor comprising:
at least one body defining a barrel extending between the atmosphere and an intake manifold, whereby air can flow through said barrel into said manifold;
a fuel nozzle extending into said barrel;
a choke valve rotatably mounted in said barrel upstream from said nozzle;
a butterfly valve rotatably mounted in said barrel downstream from said nozzle;
means for biasing said choke valve into a first position wherein said choke valve is completely closed;
pressure sensitive means movable in response to variations in the pressure in said intake manifold;
linkage means connected between said choke valve and said pressure sensitive means, said linkage means including at least one articulation and being movable by said pressure sensitive means to permit said choke valve to move between said first position and a second fully open position;
a cam rotatably mounted on said at least one body, said cam including an appendage fixed thereto; and
means for moving said cam between first, second and third positions, wherein said appendage is in a displacement path of said at least one articulation when said cam is in said first position and wherein said appendage is outside of said displacement path when said cam is in said second position, whereby said appendage limits the opening of said choke valve only when said cam is in said first position.

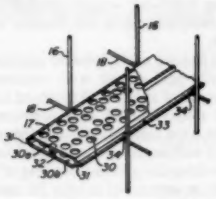
4,439,378
COOLING TOWER SPLASH BAR METHOD AND APPARATUS

John C. Ovard, 3465 Ridgeview Dr., Santa Rosa, Calif. 95404

Filed May 23, 1983, Ser. No. 496,931
Int. Cl.³ B01F 3/04
U.S. Cl. 261—111 **14 Claims**

8. A foldable member for forming a cooling tower splash bar comprising
a first elongate perforated flat surface member;
a second elongate perforated flat surface member substantially coplanar with said first surface member and positioned adjacent thereto;
upwardly inclined third and fourth elongate surface members connected respectively to the adjacent elongate edges of said first and second surface members;
said third and fourth surface members flexibly joined together by an elongate joint extending substantially parallel to said adjacent elongate edges; and
upwardly outwardly inclined fifth and sixth elongate surface members connected respectively to the remote elongate edges of said first and second surface members;
whereby first, third and fifth surface members can be folded over along said joint and on top of said second, fourth and sixth surface members to form a hollow member with the remote elongate edges of said fifth and sixth surface members then adjacent one another.

14. A method of cooling a liquid in a cross flow cooling tower includes a matrix of longitudinally extending splash bars each having upper and lower elongate perforated surfaces held in parallel spaced apart relation to one another by laterally outwardly projecting edge supports connecting the adjacent elongate edges of said surfaces, said method comprising the steps of:
flowing air horizontally through said matrix;
splashing warm liquid through said matrix in crossflow within said air flow;



directing a first portion of said liquid downwardly to impinge upon said upper surface of said splash bars to fragment and laterally disperse said first portion;
directing a second portion of said liquid and a first subportion of said first portion of said liquid laterally dispersed on said upper surface downwardly to pass through the perforations of said upper surface to impinge upon said lower surface of said second portion and said first subportion;
deflecting said first subportion and the second subportion of said first portion, and said second portion laterally of air flow through said matrix; and
repeating said flowing, splashing, directing and deflecting steps through said matrix to fragment said liquid into uniformly dispersed droplets for creating maximum heat exchange surface between said liquid and air.

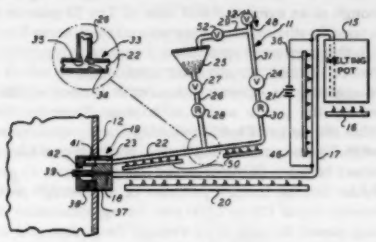
4,439,379
METHOD FOR THE CONTINUOUS MANUFACTURE OF FINELY DIVIDED METALS, PARTICULARLY MAGNESIUM

Robert J. Hart, 190 Briarwood Crossing, Cedarhurst, N.Y. 11516

Division of Ser. No. 244,249, Mar. 16, 1981, Pat. No. 4,374,633. This application Jan. 31, 1983, Ser. No. 462,628
Int. Cl.³ B01J 2/04
U.S. Cl. 264—12 **5 Claims**

1. A method for manufacturing finely divided particles of magnesium comprising:
(a) projecting a stream of molten magnesium into an enclosed chamber containing a gaseous atmosphere inert to said magnesium;
(b) projecting at a velocity exceeding that of the magnesium a stream of inert gas to contact and atomize said magnesium stream into a spray of finely divided droplets, said droplets being dispersed and cooled by said inert gas within said chamber to solidification; and
(c) entraining in said inert gas stream prior to contact with

said magnesium stream a finely divided abrasive particulate comprising an oxide of magnesium which combines



with said formed droplets and said solid magnesium particles.

4,439,380

PHOTOPOLYMERIZABLE COMPOSITION, ESPECIALLY FOR DENTAL PURPOSES

Rudy Michl, Schaan, and Hanspeter Willi, Vaduz, both of Liechtenstein, assignors to Etablissement Dentaire Ivoclar, Schaan, Liechtenstein

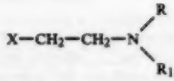
Filed Jul. 17, 1981, Ser. No. 284,294

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029276

Int. Cl.³ C08F 2/50; A61C 13/00, 13/08

U.S. Cl. 264—16 **22 Claims**

1. A photopolymerizable composition comprising a photopolymerizable olefin, at least one ketone and one amine, said amine having the formula



wherein the symbols have the following meaning:

X represents cyan, chlorine, bromine or iodine; R represents the group X—CH_2—CH_2 (where X has the meaning given above) or an alkyl group of 1 to 6 carbon atoms or a hydroxy alkyl group of 2 to 6 carbon atoms;

R_1 represents a benzyl, phenyl or styryl radical optionally substituted by chlorine, bromine or iodine, or by a carboxy, carbalkoxy, lower alkyl, alkoxy or hydroxyalkyl, cyano or nitro group.

4,439,381

METHODS OF PREPARING POLYIMIDES AND ARTIFACTS COMPOSED THEREOF

John Gagliani; Raymond Lee, and Anthony L. Wilcoxson, all of San Diego, Calif., assignors to I M L Corporation, Elk Grove Village, Ill.

Division of Ser. No. 186,629, Sep. 12, 1980, Pat. No. 4,305,796. This application May 11, 1981, Ser. No. 262,519

Int. Cl.³ B29H 5/26

U.S. Cl. 264—26 **28 Claims**

1. A method of preparing a polyimide from a non-polymeric precursor comprising an ester of a tetracarboxylic acid and one or more primary diamines which includes the step of exposing said precursor to microwave radiation having a frequency of at least 915 mHz for periods of sufficient duration to develop a cellular physical structure and to at least partially develop a polyimide chemical structure, said precursor being supported while it is exposed to microwave radiation on an inflexible, temperature resistant substrate that is compatible with such radiation.

4,439,382

TITANIUM DIBORIDE-GRAPHITE COMPOSITES

Louis A. Joo', Johnson City; Kenneth W. Tucker, Elizabethton, and Frank E. McCown, Jr., Bristol, all of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,124

Int. Cl.³ C25B 11/04; C25C 3/12

U.S. Cl. 264—29.5 **19 Claims**

1. A process for manufacturing a carbon-TiB_2 composite article comprising blending coke, a first carbonizable binder and a first TiB_2 forming reactant to form a dispersion, shaping said article, baking said article to carbonize said binder, impregnating said article under alternate cycles of vacuum and pressure at least once with a second TiB_2-forming reactant in liquid form, and heating said article to a TiB_2-forming temperature to form said carbon-TiB_2 composite article.

4,439,383

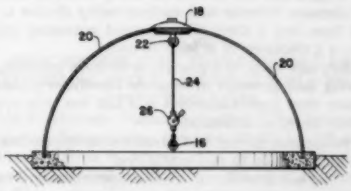
METHOD OF CONSTRUCTING SHELL-FORMED STRUCTURES

Billy J. Collins, P.O. Box 1327, Claremore, Okla. 74017

Filed Sep. 7, 1982, Ser. No. 414,660

Int. Cl.³ E04B 1/32

U.S. Cl. 264—32 **6 Claims**



1. A method of constructing a shell-form structure comprising:

constructing a base for such structure, the base having retention means defining an area of contact of the finished building wall with the base;

supporting a top yoke above the base;

positioning a plurality of spaced apart flexible slats, each with one end in engagement with the base retention means and an other end in engagement with said top yoke;

lowering said top yoke to cause said flexible slats to bow uniformly into a generally quarter-circular or quarter-elliptical configuration generally defining a desired exterior configuration of the structure;

attaching a covering to the bowed slats;

applying a covering layer of settable material to the covering;

allowing the settable material to set to thereby form a structure of the desired configuration.

4,439,384

METHOD FOR MANUFACTURING GRAULES FROM POTASSIUM CHLORIDE FINES

Hans G. Bergendahl, Bochum-Weitmar, Fed. Rep. of Germany, assignor to Maschinenfabrick Koppern GmbH & Co. KG, Hattingen, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,355

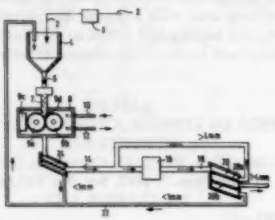
Int. Cl.³ B01J 2/22

U.S. Cl. 264—37 **5 Claims**

1. A method of manufacturing granules from potassium chloride fines comprising:

a. feeding potassium chloride fines by means of filling screws to a roll press having a pair of rolls arranged side by side with parallel rotational axes in a roller frame, one of said rolls being rotatable about a substantially stationary axis and the other roll being laterally displaceable against a

hydraulic roller setting system, said filling screws being mounted on said roller frame for feeding into the nip of the two rolls, said fines having a temperature of at least 120° C. when entering said nip, said rolls having profiled surfaces with honeycomb-like depressions therein, the depressions on the opposite rolls being laterally and circumferentially offset by approximately 50% relative to each other, said rolls being internally cooled to operate with surface temperatures of less than 80° C., being driven with circumferential velocities of between 0.55 and 0.75 meters per second, and having specific press forces therebetween of at least 4.5 metric tons per linear centimeter of



roll length, and said profile on said profiled surfaces and the distance between said surfaces being chosen to form said fines into a sheet of compacted potassium chloride having a thickness of at least 10 mm;

b. feeding said sheet to a granulator to form granules;

c. sieving said granules to separate therefrom granules of greater than approximately 4 mm and less than approximately 1 mm in dimension;

d. recycling said granules of greater than approximately 4 mm in dimension to said granulator;

e. recycling said granules of less than approximately 1 mm in dimension to said roll press.

4,439,385

CONTINUOUS PROCESS FOR THE AGGLOMERATION OF PTFE POWDERS IN A LIQUID MEDIUM

Jürgen Kuhls; Eduard Weiss, both of Burghausen, and Gottfried Burgstaller, Burgkirchen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,716
Int. Cl.³ B01J *2/12*
U.S. Cl. 264—37 **8 Claims**

1. A process for the continuous production of an agglomerated molding powder from a granular non-melt-fabricable tetrafluoroethylene polymer primary powder in which the average particle diameter d_{50} of the primary particles is 20 to 80 μm, in a liquid medium which passes through the whole process and consists of water and an organic liquid which is capable of wetting such a tetrafluoroethylene polymer and is soluble in water to the extent of not more than 15% by weight, the weight/volume ratio of primary powder to organic liquid being 7:1 to 1.3:1 and the volume/volume ratio of organic liquid to water being 1:1.4 to 1:50, with mechanical agitation at temperatures of 5° to 90° C., which comprises passing the primary powder, together with the liquid medium, through a three-stage cascade in which, initially, the primary powder, the water and the organic liquid, in the ratio mentioned,

(a) are continuously introduced into a pretreatment stage filled with the liquid medium and are moved forward in the former, where the primary powder is first drawn in a conveying zone into the liquid medium, and is suspended in the latter, by means of a stirring element which effects the conveyance, then arrives in a directly adjacent dispersing zone and is there converted, by the action of a stirring element having a dispersing action within the range of the specific stirring energy applied, into a form which is essentially uniformly finely distributed within the liquid medium, then arrives in a directly adjacent homogenizing zone and is pre-agglomerated there by the action of a turbine-shaped stirring element to give secondary particles having an average particle diameter d_{50} of about 100 to about 400 μm, the pretreatment stage being passed through at an average dwell time of 3 to 30 minutes and the specific stirring energy introduced there being 5 to 100 W/l, this pretreated suspension then

(b) passes through an agglomeration stage in which the pre-agglomerated primary powder is further agglomerated by the gentle action of stirring elements which, within the range of specific stirring energy applied, exert essentially no comminuting action, producing an adequate contact between particles in the liquid medium, to give a powder having tertiary particles of an average particle diameter d_{50} of 150 to 1,000 μm, the agglomeration stage being passed through at an average dwell time of 5 to 50 minutes and the specific stirring energy introduced there being 2 to 30 W/l, this suspension then

(c) is passed through an after-treatment stage in which, by maintaining an average dwell time of 6 to 60 minutes and by the action of a multi-bladed stirrer element which introduces a specific stirring energy of 5 to 30 W/l into the suspension, the final formation of the particle shape takes place without a further essential change in the average particle size, and finally

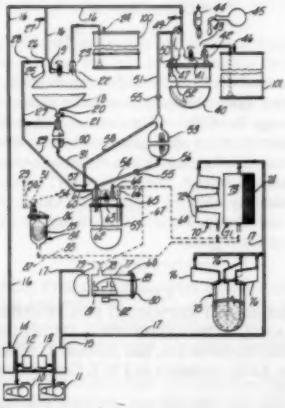
(d) is discharged continually from the after-treatment stage, and the agglomerated powder is separated from the liquid medium in a known manner.

4,439,386

VACUUM INJECTION MOLDING PROCESS

Thaddeus Antczak, 32431 Halmich, Warren, Mich. 48092

Filed Oct. 22, 1980, Ser. No. 199,689
Int. Cl.³ B29F *1/00*
U.S. Cl. 264—102 **18 Claims**



1. A process for forming void free solid polyurethane bodies from a first reactant comprising polyol and a second reactant comprising polyisocyanate, said reactants being selected so as to form a solid, rigid polyurethane body, said process comprising the steps of:

(a) evacuating a vessel of said first reactant and a container of said second reactant to thereby dehumidify and degas said first reactant and said second reactant;

(b) flowing said first reactant and second reactant into a common chamber under vacuum;

(c) mixing said first reactant and said second reactant in said chamber under vacuum;

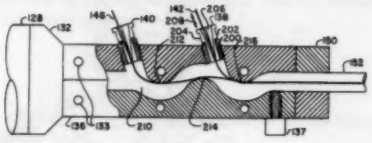
(d) flowing the mixture of said first reactant and said second reactant into a mold under vacuum; and
(e) standing said mixture in said mold under vacuum to thereby form a solid polymeric body.

4,439,387

METHOD OF MANUFACTURING A COMPOSITE REINFORCING STRUCTURE

Ronald C. Hawley, Winona, Minn., assignor to Polymer Composites, Inc., Winona, Minn.

Division of Ser. No. 75,116, Sep. 13, 1979, Pat. No. 4,312,917.
This application Nov. 16, 1981, Ser. No. 321,375
Int. Cl.³ B29F 3/10
U.S. Cl. 264—108 2 Claims



1. A method of manufacturing a composite reinforcing structure comprising the steps of:
extruding a mass of fluid thermoplastic resin material in a flowable state and having no discrete shape into and longitudinally through an elongated, stationary die having no relatively movable components, said die having a continuous, fully open central passage extending longitudinally therethrough, and a plurality of lobes projecting radially inwardly into said central passage from spaced apart locations along the length of the inside, opposite side walls of said central passage in interleaving relation to each other to form a convoluted passage through which said thermoplastic resin material flows;
simultaneously introducing a plurality of continuous lengths of reinforcing fiber strands into said die central passage at different locations therein;
separately passing each of said fiber strands longitudinally within and along the length of said central passage over and between said interleaving lobes in the presence of said flowing mass of thermoplastic material to thoroughly contact and coat each of said fiber strands with said thermoplastic material; and
drawing said thermoplastic resin material and said coated fiber strands from said die, longitudinally thereof, to thereby produce a solid plastic rod member having said fiber strands extending longitudinally therein generally parallel to the longitudinal axis of said rod member inside of said plastic material.

4,439,388

PROCESS FOR CROSSLINKING OF POLYMERS AND COPOLYMERS USING FREE RADICAL FORMING AGENTS

Jurgen Groepper, Gunzburg, Fed. Rep. of Germany, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 3, 1982, Ser. No. 405,019
Int. Cl.³ B29H 21/04; B29C 25/00
U.S. Cl. 264—130 2 Claims

1. A process for the crosslinking of crosslinkable polymers or copolymers comprising molding the crosslinkable polymers or copolymers into the desired shaped articles, pretreating the shaped articles in order to prevent the surfaces from being sticky by coating on the shaped articles a member selected from the group consisting of boric acid, boric acid anhydride, and mixtures thereof, and crosslinking the coated shaped articles with free radical initators of organic peroxides in the presence of oxygen wherein the crosslinked shaped articles have non-sticky surfaces.

4,439,389

METHOD FOR SHAPEFORMING ACRYLONITRILE POLYMER AQUAGEL FILM

Randal J. Hasenauer, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,127
Int. Cl.³ B29C 17/04; B29D 7/02
U.S. Cl. 264—216 9 Claims

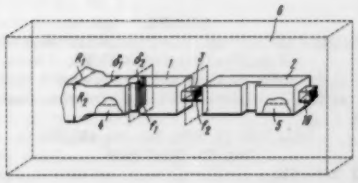
6. The method of thermoforming acrylonitrile polymer film comprising:
(a) providing acrylonitrile polymer aquagel film by applying onto a film supporting cooled surface a concentrated solution of an acrylonitrile polymer in a solvent therefor that is water soluble, to provide a film comprising said polymer and said solvent, contacting the resulting film with an aqueous medium to at least substantially remove and replace with water the solvent in the film and recover an aquagel film consisting essentially of acrylonitrile polymer and from about 20 to about 70 percent by weight water;
(b) preheating said film to a temperature sufficient to facilitate thermoforming;
(c) conforming the preheated aquagel film into the desired shape;
(d) while in said shape, heat-removing at least substantially all of the water from said aquagel film; and
(e) cooling the shaped-water-free film.

4,439,390

PROCESS FOR INJECTION MOLDING OF THERMOPLASTICS AND SPLIT MOLD FOR EFFECTING SAME

Vsevolod V. Abramov, Poklonnaya ulitsa, 6, kv. 4; Vsevolod V. Kuznetsov, Komsomolsky prospekt, 38/16, kv. 92; Alexandr V. Veselov, ulitsa K. Marxa, 21/4, kv. 20; Vitaly S. Tkhai, ulitsa Veshnyakovskaya, 25/2, kv. 227, all of Moscow; Nikolai I. Rysin, ulitsa Kirova, 22, korpus 1, kv. 27, gorod Solntsevo, Moskovskaya oblast, and Vasily I. Gerasimov, Derbenevskaya naberezhnaya, 1/2, kv. 81, Moscow, all of U.S.S.R.

Filed Oct. 2, 1981, Ser. No. 307,739
Claims priority, application U.S.S.R., Apr. 27, 1979, 2759560; Jun. 12, 1980, 2939423
Int. Cl.³ B29F 1/06
U.S. Cl. 264—297.2 4 Claims



1. A process for injection molding of a thermoplastic polymer in a mold having molding surfaces which define interconnected molding cavities, arranged in series, interconnected by inlet and outlet openings wherein at least a molding cavity in the series provides an opening for the thermoplastic polymer to exit the molding cavity which comprises: (a) forcing a fluid polymer to flow serially through said interconnected cavities in a continuous flow under pressure, at a temperature lower than about 50° C. above the melt point or flow point of the polymer, through an inlet opening into the cavities in series; (b) maintaining the polymer under a pressure of from about 900 to 3000 Kg f/cm^2 until the polymer solidifies in the cavities wherein the temperature of the molding surfaces are maintained at a temperature from about −20° C. to the melt or flow point of the polymer.

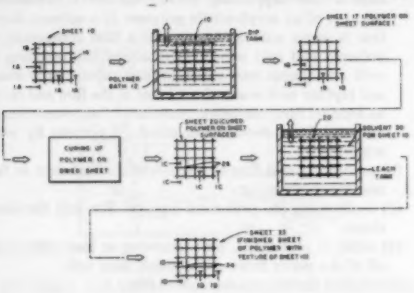
4,439,391
POLYMERIC SHEETS

John H. Hung, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 52,221, Jun. 26, 1979, Pat. No. 4,289,125, which is a continuation of Ser. No. 735,671, Nov. 1, 1976, Pat. No. 4,175,557, which is a continuation-in-part of Ser. No. 634,908, Nov. 24, 1975, Pat. No. 4,034,751. This application Jan. 7, 1981, Ser. No. 223,118

Int. Cl.³ B29C *1/14;* B29D *27/00*

U.S. Cl. 264—317 40 Claims



1. A process for preparing a sheet of polymeric material having a fabric texture on at least one surface thereof, which comprises:

(1) applying a liquid containing a polymer to a mesh-like skeleton sheet of a first material to encase the first material within a shell of the polymer, the polymer being different from the first material;

(2) curing or hardening the polymer to form a polymeric sheet having at least one surface substantially conforming to the surface of the encased first material; and

(3) treating the product from step (2) with a solvent in which the first material is soluble but in which the cured or hardened polymer is substantially insoluble to dissolve the first material and produce within the polymeric sheet a network of voids conforming to the configuration of the dissolved first material and extending between the edges of the polymeric sheet.

4,439,392
METHOD AND APPARATUS FOR MAKING A GLASS LAMINATED STRUCTURE

Jerome C. Schutzler, El Toro, and Kurt E. Jechel, Santa Ana, both of Calif., assignors to PDA Engineering, Santa Ana, Calif.

Filed Nov. 22, 1982, Ser. No. 443,590

Int. Cl.³ B29C *6/04*

U.S. Cl. 264—511 23 Claims

1. A method of making a glass laminated structure comprising:

retaining first and second glass panels against first and second platens, respectively, and in spaced generally parallel relationship using differential fluid pressure acting across said panels;

introducing a curable flowable material into the space between said panels during said step of retaining;

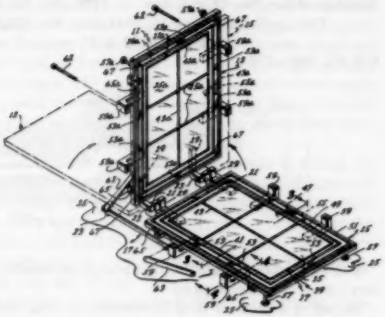
curing the flowable material to provide said glass laminated structure; and said first glass panel and the first platen have confronting faces of somewhat different configurations and said step of retaining holds the first panel against the first platen with sufficient force to deform the first panel to more closely conform the face of the first panel to the face of the first platen to improve the optical characteristics of the laminated glass structure.

11. A method of making a glass laminated structure comprising:

retaining first and second glass panels against first and second platens, respectively, and in spaced generally parallel relationship using differential fluid pressure acting across said panels;

introducing a curable flowable material into the space between said panels during said step of retaining;

curing the flowable material to provide said glass laminated structure;



retaining first and second frames against the first and second platens, respectively, in confronting generally parallel relationship using differential fluid pressure acting across said frames and with the first and second frames at least partially circumscribing the first and second panels, respectively;

first and second gaps between the first frame and the first panel and between the second frame and the second panel, respectively; and

placing first and second deformable seals in the first and second gaps, respectively.

4,439,393
METHOD OF PRODUCING SYNTHETIC RESIN BOTTLE WITH HANDLE

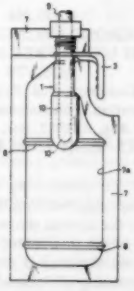
Tadao Saito; Masao Akutsu; Hiroaki Sugiura, and Shuzo Endo, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 113,352, Jan. 18, 1980, Pat. No. 4,311,246. This application Jun. 15, 1981, Ser. No. 273,827

Claims priority, application Japan, Feb. 9, 1979, 54-14521

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—532 8 Claims



1. A method of forming a nonsymmetrical container having walls of equal thickness, comprising the steps of: forming a

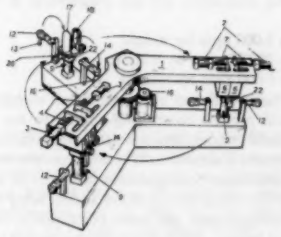
parison having a top portion, a central portion, a lower portion, and a handle extending laterally of said top portion and said central portion, said parison defining an axially off-center annular cavity in its central section whereby said central section is formed with a first thin wall portion adjacent said handle and a circumferentially opposing second wall portion thicker than said first wall portion; heating at least said central and lower portion of said parison; placing said parison in at least one mold defining the shape of said nonsymmetrical container such that said thin wall portion lies in direct contact with said mold; and inserting a blow pipe into said parison and blowing air under high pressure into said parison, said thin wall portion being prevented from undesirable expansion by said contact with said mold while said central and lower portions other than said thin wall portion expand and are biaxially oriented upon said blowing.

4,439,394

HEAT SETTING METHOD

John A. Appleyard, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 5, 1982, Ser. No. 439,259
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—535 **8 Claims**



1. A method of effecting orientation blow molding, heat setting and cooling of a thermally crystallizable polymer comprising

(a) providing a hollow parison of an essentially amorphous, thermally crystallizable polymer, preheated to a temperature range conducive to orientation during stretching,

(b) enclosing said parison in the halves of a blow mold of low mass capable of rapidly conducting heat,

(c) enclosing said blow mold within the halves of a mold of much greater mass than said blow mold, preheated to a heat setting temperature at least as high as the orientation temperature of said parison, the interior contour of said preheated mold in closed position being essentially identical with and in contact with the exterior surface of said blow mold,

(d) step (c) heating said blow mold to essentially the heat setting temperature of said preheated mold,

(e) orientation blow molding said parison, by application of internal pneumatic pressure thereto, so that said parison tightly conforms to the interior contour of said blow mold and heat is transferred to the blown article by the hot walls thereof at said heat setting temperature, thus heat setting the blown hollow article, and thereafter

(f) while maintaining at least sufficient pressure on said heat set article to prevent shrinkage thereof and thus to keep it in firm contact with the interior walls of said blow mold, removing said blow mold without cooling from said preheated mold and then

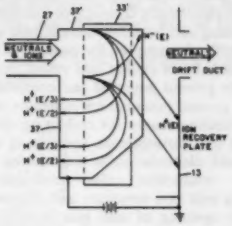
(g) repeating the foregoing steps using another hollow parison and another blow mold of low mass, but using the same, still preheated mold in step (c).

4,439,395

NEUTRAL BEAMLINE WITH IMPROVED ION ENERGY RECOVERY

Jinchoon Kim, San Diego, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,953
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—130 **1 Claim**



1. In for a neutral particle beam injector system wherein a neutral particle beam is generated and directed along a beamline, including a substantially ground-potential-operated ion source from which ions of a selected isotopic species are accelerated to a desired kinetic energy level along said beamline through a neutralizer, said neutralizer being operated at a selected ion acceleration potential relative to said ion source to provide said desired kinetic energy level and wherein a significant portion of said ions are converted into energetic neutral particles together with electrons, full kinetic energy atomic ions and fractional kinetic energy atomic ions derived from molecular ions of said selected species accelerated into said neutralizer, an ion energy recovery system including a magnetic field generating means for producing a magnetic field (B) transverse to said beamline in a beam exit region at the beam exit end of said neutralizer and of sufficient strength to substantially block electrons from exiting said neutralizer and deflecting said full energy ions from said beamline along separate paths from said beamline, and at least one ground potential full energy ion charge collector surface disposed in the path of the full energy ions deflected from said beamline for decelerating and collecting the charge from said full energy ions directed to said ion collector, the improvement in said ion energy recovery system comprising:

a non-magnetic, electrically conductive enclosing structure attached to and forming an enlarged exit end of said neutralizer at said exit region of said neutralizer, said structure being operated at the same potential as said neutralizer to form an electric field shield about said exit region defined by said structure, said structure having a pair of opposite sides which extend in parallel planes perpendicular to said magnetic field (B), said structure having a down stream opening along the paths of said beamline and the full energy ions deflected from said beamline, said structure having an upstream surface extending from the exit end of said neutralizer perpendicular to said beamline and in a direction toward the direction of said ions deflected from said beamline so that the fractional energy ions are magnetically reflected back onto the inner walls of said enclosing structure while said full energy ions which are deflected from said beamline and neutral particles pass out of said downstream end opening of said structure; wherein said magnetic field generating means includes a pair of magnet pole pieces disposed on opposite sides of said enclosing structure parallel to said pair of opposite sides of said enclosing structure, said pole piece being operated at ground potential and electrically insulatably spaced from said sides of said enclosing structure so that said enclosing structure side walls electrically shield said exit region

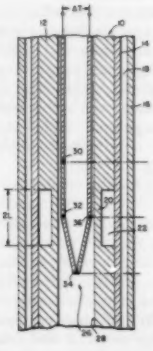
from electric fields induced by the close proximity of the ground operated magnetic pole pieces, said enclosing structure being an electrically conducting metal box of generally rectangular shape having its downstream end open along a path extending transversely to said beamline and the path of said full energy ions exiting said exit region; said source being a positive ion source and further including a power source connected between said neutralizer and ground potential for applying a negative acceleration voltage to said neutralizer and said box structure relative to said ion source; said neutral beam injector including an electrically conductive vacuum containment vessel enclosing said beamline therein, said vessel having a beam exit drift tube adapted for passage of said energetic neutral particle beam exiting said vessel, said vessel being connected to ground potential and comprises one of said at least one ground potential ion collector surface; and an electron collecting means for collecting electrons which tend to exit said downstream opening of said enclosing structure said electron collecting means including an electrically conductive collar uniformly insulatably spaced from said box structure and disposed about said downstream opening of said box structure, said collar extending downstream beyond said downstream opening of said box structure and biased sufficiently positive relative to said box structure to intercept electrons which are forced to drift toward said collector due to the transverse magnetic and electric fields present at said downstream opening of said box structure.

4,439,396

MULTIJUNCTION DIFFERENCE THERMOCOUPLES FOR GAMMA SENSORS

Erik Rolstad, Halden, Norway, assignor to Scandpower, Inc., Bethesda, Md.

Filed Apr. 24, 1981, Ser. No. 256,992
Int. Cl.³ G21C *17/00*; G01H *25/00*
U.S. Cl. 376—247 **14 Claims**



1. In combination with a power monitoring sensor for a nuclear reactor, including an axially elongated body internally heated by gamma radiation and differential temperature sensing means mounted internally within said body for measuring temperatures therein, said body having axially spaced thermal resistance portions establishing differential temperature regions including a relatively hot region located axially between two relatively cold regions, said temperature sensing means having two axially spaced thermocouple junctions interconnected in series and respectively located centrally within the hot region and in one of the two cold regions to produce a differential temperature signal, the improvement residing in means for eliminating signal error from the temperature signal arising from axially asymmetrical heat distribution in the body, comprising additional thermocouple junctions connected in series with said two junctions, at least one of the additional junctions being located in the other of the two cold regions within the body and another of the additional junctions being located centrally within the hot region of the body.

4,439,397

PROCESS FOR ADJUSTING THE COMPOSITION OF A ZINC ALLOY USED IN THE GALVANIZATION OF STEEL

Noël Dreulle, 6 rue Foucques, 59500 Douai, France

Filed Mar. 23, 1982, Ser. No. 361,081
Claims priority, application France, Mar. 25, 1981, 81 05955
Int. Cl.³ C22C *18/00*
U.S. Cl. 420—519 **13 Claims**

1. A process for adjusting the composition of a zinc alloy suitable for the dip galvanization of steels, including silicon steels, said alloy consisting essentially of zinc of commercial purity, containing 1,000 to 15,000 ppm by weight of lead, and, as additives, aluminum, tin and magnesium in the following amounts:

Al: 100 to 5,000 ppm by weight
Sn: 300 to 20,000 ppm by weight
Mg: 10 to 1,000 ppm by weight

said alloy being deficient in at least one of aluminum and magnesium, said process comprising adding to the zinc alloy at least one metal composition which is soluble in molten zinc and which contains a substantially greater proportion of the said deficient aluminum or magnesium than that of said alloy, the amount of the metal composition added being such that the deficit is compensated, the metal composition for the magnesium deficit being a ternary zinc/magnesium/aluminum alloy containing 5,000 to 50,000 ppm by weight of magnesium and 10 to 500 ppm of aluminum; and the metal composition for an aluminum deficit being a binary zinc/aluminum alloy containing of the order to 5% by weight of aluminum, and added in an amount which takes account of the possible addition of said ternary zinc/magnesium/aluminum alloy; and compensating any tin deficit in the zinc alloy by adding a sufficient amount of virtually pure tin.

4,439,398

METHOD OF ALLOYING CALCIUM AND ALUMINUM INTO LEAD

Raymond D. Prengaman, Arlington, Tex., assignor to RSR Corporation, Dallas, Tex.

Filed Nov. 13, 1981, Ser. No. 321,051
Int. Cl.³ C22C *11/00*
U.S. Cl. 420—564 **3 Claims**

1. A method of making a lead-calcium-aluminum alloy at low temperature, without an inert flux and with minimal losses of aluminum and calcium comprising:

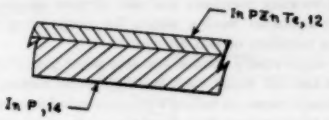
(a) melting lead;
(b) heating the molten lead; and
(c) stirring a eutectic calcium-aluminum alloy into the heated molten lead.

4,439,399

QUATERNARY ALLOY

Frank Z. Hawrylo, Trenton, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 6, 1982, Ser. No. 375,642
Int. Cl.³ C22C 30/00
U.S. Cl. 420—580 2 Claims



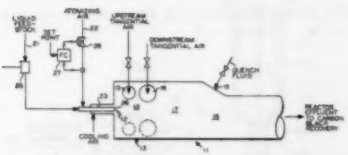
1. A semiconductor quarternary alloy being a solid solution consisting of indium, phosphoros, zinc, and tellurium.

4,439,400

APPARATUS FOR PRODUCING CARBON BLACK

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 186,794, Sep. 12, 1980, Pat. No. 4,328,199.
This application Jan. 29, 1982, Ser. No. 344,147
Int. Cl.³ C09C 1/48; B01J 10/00
U.S. Cl. 422—111 3 Claims



1. In a carbon black reactor comprising an atomizing bifluid nozzle and a means for introducing hot gases into contact with a make hydrocarbon introduced into the reactor through the atomizing bifluid nozzle for decomposition of the make hydrocarbon to form carbon black, a source of make hydrocarbon and a means for connecting the source of make hydrocarbon to the atomizing bifluid nozzle and a source of gaseous atomizing fluid and a means for connecting the source of gaseous atomizing fluid to the atomizing bifluid nozzle,

wherein the atomizing bifluid nozzle becomes coked thereby diminishing the flow rate of at least one of the make hydrocarbon and the atomizing fluid,

the improvement comprising:

a valve means associated with the means connecting the source of gaseous, atomizing fluid with the atomizing bifluid nozzle for interrupting flow of the gaseous atomizing fluid independently of the flow of make hydrocarbon to effect cleaning of the atomizing bifluid nozzle, and

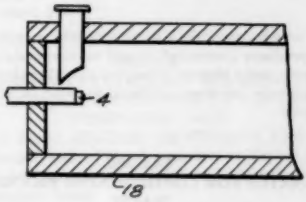
a timing means connected to the valve means for stopping the flow of atomizing fluid for a predetermined time interval.

4,439,401

PROCESS AND APPARATUS FOR THE PRODUCTION OF CARBON BLACK

Manfred Voll, Greifenhagenstrasse 11, 6450 Hanau 9; Lothar Rothbühr, Volkerstrasse 10, 503 Hermülheim, and Gerhard Kühner, Liesingstrasse 1, 6450 Hanau 9, all of Fed. Rep. of Germany

Continuation of Ser. No. 191,519, Sep. 29, 1980, abandoned, which is a continuation of Ser. No. 946,420, Sep. 25, 1978, abandoned, which is a division of Ser. No. 769,785, Feb. 17, 1977, abandoned. This application Mar. 19, 1982, Ser. No. 359,856
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1976, 2608417
Int. Cl.³ C09C 1/48; B05B 1/14
U.S. Cl. 422—150 4 Claims



1. In an apparatus for producing carbon black, including, in combination, a carbon black reactor furnace and nozzle means disposed in said furnace for spraying a liquid feedstock hydrocarbon and a propellant gas into a stream of hot reaction gases produced by burning a fuel, said nozzle means being of the binary type having a first feed channel for the liquid feedstock hydrocarbon and a second separate feed channel for the propellant gas, the improvement comprising said nozzle means having a longitudinal axis, a nozzle chamber, an inlet orifice at one end of said chamber, a head outlet at the opposite end of said nozzle chamber, said first and second feed channels of said nozzle means both terminating at said inlet orifice, said nozzle chamber having an inner diameter, said inlet orifice of said nozzle chamber being spaced from said head outlet a distance from 1–6 times said inner diameter of said nozzle chamber, said head outlet of said nozzle means having a plurality of channels therein distributed about said longitudinal axis with said channels being distributed over the circumference so that they make with each other an angle of 15° so that the liquid will be sprayed in a hollow cone pattern having an opening angle of between 45° and 120°.

4,439,402

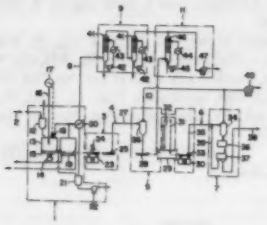
NUCLEAR FUEL CONVERSION SYSTEMS

Kohei Tarutani, Yokohama; Takeo Tamura, Mito, and Hirofumi Oshima, Tokai, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa and Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, both of, Japan

Filed Dec. 10, 1981, Ser. No. 329,580
Claims priority, application Japan, Dec. 16, 1980, 55-177930
Int. Cl.³ B65G 53/60; B01D 35/02; G21F 9/08; B01J 19/12
U.S. Cl. 422—159 1 Claim

1. In a nuclear fuel conversion system of the type comprising a microwave generator unit for heating and denitrifying a nitric acid solution of uranyl nitrate, plutonium nitrate or a mixture thereof, means connected to said microwave generator heating and denitrifying unit for grinding denitrified products, means connected to said grinding means through a first conveying means for roasting and reducing ground products, means connected to said roasting and reducing means through a second conveying means for further grinding and sieving roasted and reduced products, and means connected to said microwave generator heating and denitrifying unit and said roasting and reducing means for disposing of waste gases and

waste liquor therefrom, the improvement in which said microwave generator heating and denitrifying unit includes a cooling device for solidifying denitrified products and said first and second conveying means comprise pneumatic carrier means



each of which comprises a suction nozzle, a cyclone for collecting products connected to said suction nozzle through a carrier pipe, and a blower connected to said cyclone through a carrier pipe for creating a reduced pressure condition in said carrier pipe.

4,439,403

APPARATUS FOR CONDITIONING BIOINJURIOUS WASTE

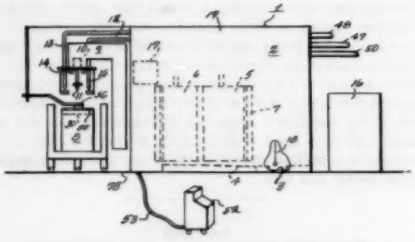
Herbert Brunner, Grünaustrasse 15, 6450 Hanau 9; Bernhard Christ, Schwalbenstrasse 22, 6090 Rüsselsheim; Wilhelm Henss, Gartenstrasse 5 a, 6454 Bruchköbel; Werner Pfeifer, Mittelweg 34, 6380 Bad Homburg, and Klaus Scheuermann, Am Höhenblick 27, 6476 Hirzenhain, all of Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,829

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009005

Int. Cl.³ G21F 9/22

U.S. Cl. 422—159 **17 Claims**



1. An apparatus for conditioning of biologically injurious waste, such as radioactive material and the like, the apparatus including a chamber for receiving the waste material and having means for discharging the waste material to a filling station located adjacent the exterior of said chamber, said filling station having at least one storage container and including shielded means for holding said at least one container to be filled, movable lift means having means for handling the waste material, said lift means being movable toward and away from one end of said container in said filling station, said means for handling including a coupling member carried by said lift means for transmitting power to a stirring means associated with said container, driving means for driving said coupling member, a filling conduit for supplying waste material from said lift means to a storage container, a waste gas return conduit on said lift means connectable to said storage container for returning gas from the storage container to said chamber when said storage container is being filled with waste material, said apparatus further including means for securing a closure on said storage container before removal of said storage container from said filling station, said storage container having at one end thereof a closure member, said closure member having means for mounting a stirrer within the interior of said container and a coupling means for coupling with the coupling member of said lift means, said closure member having spaced apertures therein, with one of said apertures being adapted to be connected to said filling conduit of said lift means and the other aperture being adapted to be connected to said waste gas return conduit of said lift means, said lift means including spaced locating members and said closure member of said storage container having means for cooperating with said locating members of said lift means,

said waste supply conduit and said waste gas return conduit on said lift means each having closure means, each said closure means including a pan connected to a shaft, means for pivoting said shaft about an axis in one direction when said shaft is moved to contact a surface of said storage container to thereby move the associated pan away from the associated conduit and for moving the pan in the opposite direction when said shaft is moved out of contact with the surface of said container to bring the associated pan into a closing relationship with respect to the associated conduit, each said shaft being carried by said lift means so as to be movable therewith toward and away from the surface of said storage container.

4,439,404

SEPARATION OF URANIUM ISOTOPES

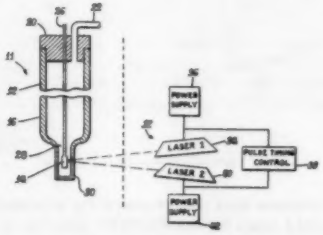
John T. Porter, II, Del Mar, Calif., assignor to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 747,102, Dec. 3, 1976, Pat. No. 4,200,507. This application Nov. 21, 1979, Ser. No. 96,442

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclosed.

Int. Cl.³ B01D 59/00

U.S. Cl. 423—3 **4 Claims**



1. A method for separating uranium isotopes comprising the steps of providing a solid, crystalline, uranyl salt source material which is photochemically reactive to reduce uranyl cations of said uranyl salt source material to tetravalent uranium ions, selectively irradiating said photochemically reactive uranyl source material at an electronic absorption wavelength in the range of from about 20,000 to about 27,000 cm^{-1} which is selective to a desired isotope of said uranyl source material at an effective cryogenic temperature for isotope spectral line splitting below about 77° K. without substantial photochemical reduction of the source material, further irradiating said source material within the fluorescent lifetime of the selectively irradiated source material at a vibrational absorption wavelength of a bond of atoms or an ionic group respectively adjacent the uranyl cations of the electronically excited source material to selectively photochemically reduce the selectively excited isotopic species, and chemically separating the reduced isotope species from the remaining uranyl salt compound.

4,439,405

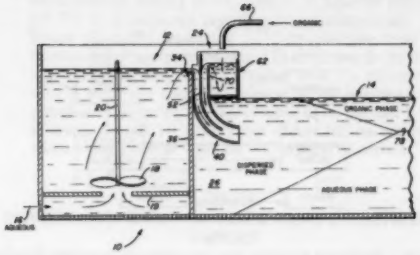
METHOD FOR VARYING THE MIXING TIME AND PROPORTIONS IN THE CONTACTING OF SUBSTANTIALLY IMMISCIBLE LIQUIDS

Ernst C. Bailey, Lakeland; William E. Vickers, Brandon, and Donald B. Stain, Lakeland, all of Fla., assignors to UNC Recovery Corporation, Mulberry, Fla.

Continuation of Ser. No. 190,266, Sep. 24, 1980. This application Sep. 27, 1982, Ser. No. 423,743

Int. Cl.³ C22B 60/02; B01D 11/00

U.S. Cl. 423—10 7 Claims



1. A method for producing a dispersion of a first liquid in a second liquid, said liquids being substantially immiscible, comprising flowing said liquids through a conduit, said conduit having an upstream section divided into first and second separate channels of variable length, said first liquid being flowed through said first channel and said second liquid being flowed through said second channel, causing said first and second liquids to mix in a downstream section of said conduit to form said dispersion of said first liquid in said second liquid, varying the length of said downstream section of said conduit wherein said first and second liquids are mixed, and varying the width of said first and second channels independently of said length variation to change the volume ratio of said first and second liquids mixed in said downstream section of said conduit.

2. The method of claim 1 in which said first liquid is an extractant for uranium and said second liquid is phosphoric acid.

4,439,406

METHOD OF CAPTURING SULFUR

Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Division of Ser. No. 148,339, May 9, 1980, Pat. No. 4,333,909. This application Apr. 2, 1982, Ser. No. 364,918

Int. Cl.³ B01J 8/00; C01B 17/00

U.S. Cl. 423—244 19 Claims

1. A method of capturing sulfur in a fluidized bed boiler comprising the steps of passing air through a bed of particulate material containing fuel and supported in a housing to fluidize said particulate material, establishing an area to one side of said fluidized bed and isolated from said fluidized bed, introducing into said area a raw acceptor for the sulfur produced as a result of combustion of said fuel, said area being in a heat transfer relation to the heat generated by said fluidized bed to calcine said acceptor, then introducing said calcined acceptor from said area into said bed where it reacts with said sulfur and discharging the sulfated acceptor from said housing.

4,439,407

METHOD FOR IMPROVING FILTERABILITY OF GYPSUM AND WET PROCESS PHOSPHORIC ACID

Kenneth L. Parks, Plant City, Fla., assignor to Agrico Chemical Company, Tulsa, Okla.

Filed Jan. 19, 1983, Ser. No. 459,257

Int. Cl.³ C01B 25/16; C01F 1/00, 11/46

U.S. Cl. 423—317 8 Claims

1. A method to increase the filterability of wet process phosphoric acid comprising the steps of:

(a) analyzing said wet process phosphoric acid to determine the total iron concentration and the relative concentrations of ferric ions and ferrous ions;

(b) adding iron to said wet process phosphoric acid as necessary to maintain the total iron content in the range of from about 0.5% to about 0.9% expressed as % Fe; and

(c) adjusting the ratio of said ferric ions to said ferrous ions above about 1.0.

4,439,408

PROCESS AND EXTRACTANT FOR REMOVING FLUORINE COMPOUNDS FROM AQUEOUS PHOSPHORIC ACID

Avraham M. Baniel, Jerusalem, and Aharon M. Eyal, Kibbutz Ramat Rachel, both of Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Filed Jun. 1, 1982, Ser. No. 384,008

Claims priority, application Israel, Jun. 15, 1981, 63097

Int. Cl.³ C01B 25/16, 7/00

U.S. Cl. 423—321 S 9 Claims

1. A process for selectively extracting fluorine compounds from aqueous phosphoric acid containing the same, said process comprising contacting said phosphoric acid with an extractant comprising phosphoric acid and an oil soluble amine, said phosphoric acid being present in said extractant in an amount of at least 0.25 moles for each mole of amine therein, said amine being substantially water insoluble both in free and in salt form and said extractant being substantially free of fluorine, sulfate and metal impurities.

4,439,409

CRYSTALLINE ALUMINOSILICATE PSH-3 AND ITS PROCESS OF PREPARATION

Lothar Puppe, Leverkusen, and Jürgen Weisser, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1982, Ser. No. 368,055

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1981, 3117135

Int. Cl.³ C01B 33/28

U.S. Cl. 423—328 2 Claims

1. A crystalline aluminosilicate having a composition corresponding to the formula (in molar ratios of the oxides):

$$M_{2/n}O.Al_2O_3.(20\text{–}150)SiO_2$$

wherein M represents an n-valent cation and having essentially the following powder X-ray diagram:

d-value	Intensity
12.63	very strong
10.92	medium
8.84	very strong
6.86	weak
6.15	strong
5.50	weak
4.91	weak
4.60	weak
4.39	weak
4.09	weak
3.91	medium

-continued

d-value	Intensity
3.75	weak
3.56	weak
3.41	very strong
3.30	weak
3.19	weak
3.11	weak
2.836	weak
2.694	weak
2.592	weak
2.392	weak
2.206	weak
2.122	weak
2.036	weak
1.973	weak
1.873	weak
1.855	weak

4,439,410

METHOD OF MANUFACTURING SILICON FROM POWDERED MATERIAL CONTAINING SILICA

Sven Santen, Hofors, and John O. Edström, Stocksund, both of Sweden, assignors to SKF Steel Engineering Aktiebolag, Sweden

Filed Aug. 2, 1982, Ser. No. 404,403
Claims priority, application Sweden, Oct. 20, 1981, 8106179
Int. Cl.³ C01B 33/02
U.S. Cl. 423—350 9 Claims

1. A continuous method of manufacturing silicon from silica-containing powdered material, which comprises the steps of: continuously injecting the silica-containing powdered material with a carrier gas, and optionally a reducing agent, into a gas plasma to heat the silica-containing powdered material, introducing the heated silica-containing powdered material, the reducing agent, if present and energy-rich plasma gas, into a reaction zone in a furnace which contains a solid reducing agent in lump form, said reaction zone being surrounded by said solid reducing agent in lump form, reacting said silica-containing powdered material with reducing agent so as to produce silicon, and continuously charging said furnace with said solid reducing agent in lump form as said solid reducing agent in lump form is consumed by the reaction of the silica-containing powdered material.

4,439,411

PRODUCTION OF SODIUM HYDROSULFIDE

James L. Manganaro, Hightstown, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jan. 22, 1981, Ser. No. 227,307
Int. Cl.³ C01B 17/32, 17/42
U.S. Cl. 423—560 8 Claims

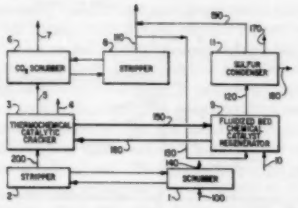
1. A continuous process for producing sodium hydrosulfide by the reaction of gaseous hydrogen sulfide with a solution of sodium sulfide comprising establishing, in a closed reaction system including a reaction chamber, an aqueous product solution resulting from the reaction of hydrogen sulfide with an aqueous solution of sodium sulfide and maintaining said reaction system in an unvented condition while maintaining a source of hydrogen sulfide, containing one or more other gases inert to the reaction in an amount not more than about 5 percent, in pressure demand relationship with said product solution in said reaction chamber and while continuously introducing a quantity of aqueous sodium sulfide feed solution into said reaction system and continuously withdrawing a corresponding quantity of product solution from said system, and periodically venting the reaction system to purge the system of accumulated gases which do not react with the sodium sulfide solution.

4,439,412

PROCESS FOR PRODUCING HYDROGEN FROM HYDROGEN SULPHIDE IN A GAS FLUIDIZED BED REACTOR

Leo A. Behie, 2532 Chicoutimi Dr.; Dimitrios Berk, 1340 University Dr., Apt. 207; P. Raj Bishnoi, 712 Varsity Estates Pl., and William Y. Svrcek, 4836 Verona Dr., NW., all of Calgary, Alberta, Canada

Filed Jul. 1, 1982, Ser. No. 394,105
Claims priority, application Canada, Jul. 6, 1981, 381149
Int. Cl.³ C01B 17/04, 3/04
U.S. Cl. 423—573 G 14 Claims



1. A method of producing hydrogen and sulfur from hydrogen sulfide gas comprising the steps of:

(a) introducing hydrogen sulfide gas into a gas fluidized bed reactor containing at least one bed of a metal chemical catalyst;

(b) maintaining said bed at a substantially constant operating temperature between 350° C. and 550° C. for a predetermined time whereby the hydrogen sulfide gas is cracked and the sulfur of said hydrogen sulfide is bound chemically to at least some of the particles of said metal chemical catalyst;

(c) raising the temperature of the said bed for a predetermined time whereby said metal chemical catalyst is regenerated and said sulfur is exhausted from said reactor as sulfur gas.

4,439,413

RADIOACTIVE DIAGNOSTIC AGENT FOR BONE SCANNING AND NON-RADIOACTIVE CARRIER THEREFOR

Miki Hayashi; Keietsu Takahashi, both of Takarazuka, and Masaaki Hazue, Amagasaki, all of Japan, assignors to Nihon Medi-Physics Company, Ltd., Japan

Filed Sep. 11, 1981, Ser. No. 300,876
Claims priority, application Japan, Sep. 13, 1980, 55/127690
Int. Cl.³ A61K 43/00, 49/00
U.S. Cl. 424—1.1 16 Claims

1. A non-radioactive carrier, which comprises (A) methanehydroxydiphosphonic acid or a pharmaceutically acceptable water soluble salt thereof and (B) at least one reducing agent for pertechnetates in a weight ratio of about 1:1 to 7:1.

4,439,414

1-^{11}C-D-GLUCOSE AND RELATED COMPOUNDS

Chyng-Yann Shiue, Wading River, and Alfred P. Wolf, Setauket, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 26, 1982, Ser. No. 342,684
Int. Cl.³ A61K 49/02
U.S. Cl. 424—1.1 6 Claims

3. A method for the preparation of a compound selected from the group consisting of 1-^{11} C-D-glucose, 2-^{11}C-D-glucose, 1-^{11}C-D-mannose, 2-^{11}C-D-mannose, 1-^{11}C-D-galactose and 2-^{11}C-D-galactose which comprises:

(1) for the production of 1-^{11}C-D-glucose and 1-^{11}C-D-man-

nose reacting D-arabinose, and for the production of 1-^{11}C-D-galactose reacting D-lyxose respectively with an alkali metal cyanide having an ^{11}C label in an aqueous media at pH 7.5 to 9, reducing resulting cyano compounds with Raney alloy and separating the desired D-glucose and D-mannose compounds from the mixture resulting from the use of D-arabinose as the starting compound and the desired D-galactose from mixture resulting from the use of D-lyxose as the starting compound; and

(2) for the production of 2-^{11}C-D-glucose or 2-^{11}C-D-mannose reacting D-erythrose or for the production of 2-^{11}C-galactose reacting D-threose respectively with an alkali metal cyanide having an ^{11}C label in an aqueous media at pH 7.5 to 9, reducing resulting cyano compounds with Raney alloy and separating 1-^{11}C-D-arabinose from the mixture resulting from the use of D-erythrose as the starting compound and 1-^{11}C-D-lyxose from the mixture resulting from the use of D-threose as the starting compound, and repeating the same reactions on the said 1-^{11}C-D-arabinose and 1-^{11}C-D-lyxose except for the use of an alkali metal cyanide with the ^{12}C isotope of carbon.

4,439,415

DEVICE INTENDED FOR DISPENSING INSECTICIDE VAPORS

Claude Hennart, Seraincourt, and Jacques Courdent, Lavausseau, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Mar. 13, 1981, Ser. No. 243,671

Claims priority, application Luxembourg, Mar. 21, 1980, 82279; Oct. 20, 1980, 82867

Int. Cl.^{3} A01N *25/26, 25/34, 37/00, 37/08*

U.S. Cl. 424—16 **6 Claims**

1. A device for dispensing insecticidal vapors which comprises a cellulosic absorptive substrate having two different pyrethrinoids absorbed into separate sections thereof, said pyrethrinoids being selected from the group consisting of allethrin, bioallethrin, tetramethrin, d-phenothrin and d-allethrin and being present in weight ratios relative one to the other ranging from 1:1 to 3:1.

4,439,416

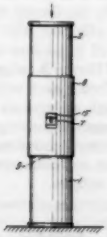
SELF-HEATING SHAVING COMPOSITION

Martin Cordon, Somerset, and Alan Dillarstone, Highland Park, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 344,314, Mar. 23, 1973, abandoned, which is a continuation of Ser. No. 56,082, Jun. 22, 1970, abandoned, which is a continuation of Ser. No. 560,140, Jun. 24, 1966, abandoned. This application Mar. 5, 1979, Ser. No. 17,777

Int. Cl.^{3} A61K *7/15*

U.S. Cl. 424—47 **5 Claims**



1. A package for dispensing a self-heating, self-foaming shaving cream composition, said package having two compartments for separate storage of ingredients of said composition from which the ingredients are adapted to be dispensed for mixing with each other with the generation of heat, the first compartment having therein about 9% sodium borohydride, about 85% heavy paraffin oil, about 5% paraffin wax and about 1% finely divided anhydrous silica, the borohydride being of a particle size of about 100 microns and the silica being less than about 45 microns; and, in the other compartment about 12% of glyceraldehyde, about 18% water, about 4% lauric-coconut diethanolamide, about 0.4% citric acid and about 65.6% of a shaving cream base comprising a mixture of about 7% stearic acid, 3% potassium hydroxide, 1% sodium hydroxide, 1% coconut oil fatty acids and water: the first compartment being pressurized with n-butane and the second compartment being pressurized with a mixture of isobutane and propane.

4,439,417

SHAMPOO COMPOSITION

Kinjiro Matsunaga, Miyashiro; Takeo Okumura, Sakura; Sachio Naito, Tokyo, and Rikio Tsushima, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

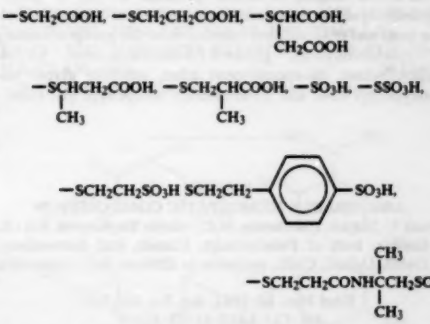
Filed Oct. 29, 1981, Ser. No. 316,489

Claims priority, application Japan, Nov. 14, 1980, 55-160357

Int. Cl.^{3} A61K *7/06, 7/09, 7/11*

U.S. Cl. 424—70 **5 Claims**

1. A shampoo composition comprising a shampoo base containing at least one anionic surface active agent in an amount of 5–30% by weight of said shampoo composition and an oxidation or reduction decomposition derivative of keratin material in an amount of from 0.05–10% by weight having a thiol group selected from the group consisting of



$SCH_2CH_2SO_2CH_2COOH$ and a mixture thereof.

4,439,418

TOPICAL PREPARATIONS FOR THE TREATMENT OF SEBORRHEA AND PROCESS FOR INHIBITING SEBUM PRODUCTION

Hinrich Möller; Siegfried Wallat, both of Monheim, and Friedhelm Bartnik, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel KGaA, Duesseldorf, Fed. Rep. of Germany

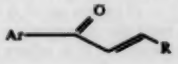
Filed Dec. 9, 1981, Ser. No. 329,079

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1981, 3129867

Int. Cl.^{3} A61K *7/06, 7/15*

U.S. Cl. 424—70 **4 Claims**

1. A process for reducing sebaceous cell sebum production in a mammal in need thereof which comprises contacting said sebaceous cell in the skin of said mammal with an effective amount to reduce sebum production of at least one unsaturated aryl ketone compound having the formula



wherein Ar represents a member selected from the group consisting of phenyl, phenyl substituted with at least one group selected from the group consisting of alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 4 carbon atoms, hydroxy and halo, and naphthyl, and R represents a member selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms, alkanoyl having from 1 to 4 carbon atoms, aryl and arylcarbonyl, where aryl has the same meaning as Ar.

4,439,419

METHOD OF TREATING GASTRIC HYPERACIDITY IN HUMANS EMPLOYING A COPOLYMER OF POLYETHYLENEPOLYAMINE AND A BIFUNCTIONAL SUBSTANCE AS EPICHLORHYDRIN

Thomas J. Vecchio, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 122,873, Feb. 20, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 247,487

Int. Cl.³ A61K *31/74*

U.S. Cl. 424—78 **4 Claims**

1. A method of reducing gastric acidity in the absence of bile acid reflux in an affected mammal or human which consists essentially of orally administering to said mammal or human an effective amount for reducing gastric acidity in said animal or human of the free base or partial acid addition salt form of a cross-linked copolymerization product of (a) a polyethylenepolyamine containing from about 2 to about 10 ethylene units and (b) a member selected from the group consisting of epichlorohydrin, glycerol-1,3-dichlorohydrin, 1,2:3,4-diepoxybutane, bis-epoxypropyl ether, ethylene glycol bis-eopxypropyl ether and 1,4-butanediol bis-epoxypropyl ether.

4,439,420

ABSORBABLE HEMOSTATIC COMPOSITION

Frank V. Mattei, Piscataway, N.J.; Martin Stephenson; Allin K. Gordon, both of Peterborough, Canada, and Namassivaya Doddi, Upland, Calif., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 16, 1982, Ser. No. 442,219

Int. Cl.³ A61K *31/23, 31/74*

U.S. Cl. 424—78 **22 Claims**

1. An absorbable hemostatic composition for use in the control of osseous hemorrhage, comprising:

(i) a component (A) comprising either a biocompatible fatty acid salt alone, which comprises between 45% and 80% by weight based on the weight of the total composition; or a mixture of said fatty acid salt with a biocompatible in vivo absorption enhancing agent, in which said mixture comprises between 35% and 45% by weight of said fatty acid salt based on the weight of the total composition, and between 25% and 35% by weight of said absorption enhancing agent, based on the weight of the total composition; and

(ii) a component (B) comprising a body absorbable biocompatible base selected from the group consisting of ethylene oxide/proplylene oxide block copolymers, polyethylene glycols and methoxypolyethylene glycols, triglycerides and fatty acid esters,

the cation of said fatty acid salt being selected from the group consisting of calcium, magnesium, zinc, aluminum, lithium and barium, the fatty acid anion being saturated or unsaturated and containing from 10 to 22 carbon atoms in the chain, said composition having a putty-like consistency at room temperature, and a tackiness sufficient for it to adhere readily to a bloody bone surface.

4,439,421

STABILIZED GAMMA GLOBULIN CONCENTRATE

John A. Hooper, Santa Ana; Samia Mankarious, Costa Mesa, and Catherine R. Liu-Rash, Mission Viejo, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 30, 1982, Ser. No. 413,060

Int. Cl.³ A61K *39/00, 35/14*

U.S. Cl. 424—85 **27 Claims**

1. A stabilized gamma globulin concentrate comprising gamma globulin (a) a water soluble, physiologically acceptable, substantially nonsurface-active hydrophilic macromolecule having a molecular weight greater than about 1000 Daltons, (b) a water soluble, physiologically acceptable protein other than gamma globulin and (c) a water soluble, physiologically acceptable polyol having a molecular weight less than the average molecular weight of the hydrophilic macromolecule, said macromolecule, protein and polyol being present, respectively, in a weight ratio to total protein in the concentrate of (a) about from 0.0075:1 to 0.062:1, (b) about from 0.01:1 to 0.125:1 and (c) about from 0.05:1 1.25:1.

4,439,422

GROUP B STREPTOCOCCUS ANTIGENS AND VACCINES

Robert M. Swenson; Gerald D. Shockman, both of Philadelphia; Toby K. Eisenstein, Wyndmoor, all of Pa., and Roberta B. Carey, Princeton Junction, N.J., assignors to Research Corporation, New York, N.Y.

Division of Ser. No. 109,147, Jan. 2, 1980, abandoned, which is a continuation of Ser. No. 802, Jan. 4, 1979, abandoned. This application Feb. 2, 1982, Ser. No. 345,054

Int. Cl.³ A61K *39/02;* **C08B** *37/00;* **C12P** *19/04*

U.S. Cl. 424—92 **6 Claims**

1. A process for producing pure Group B Streptococcus antigen and the pure Type III Streptococcus antigen of Group B Streptococcus which comprises:

(a) growing Group B, Type III Streptococcus in a nutrient culture medium at pH 7 which is free of animal protein and lipids and which contains essential nutrients, including from about 1% to 5% by weight glucose and about 0.04 M to 0.16 M phosphate, at about 34° to 38° C. for from about 12 to 72 hours.

(b) cooling the culture medium to about 4° C.;

(c) removing the bacterial cells from the culture medium;

(d) dialyzing the culture medium produced in step (c) against distilled water, while adding sufficient buffer to provide the equivalent of 0.01 Tris, pH 7.0;

(e) treating the buffered dialyzed culture medium with an anion exchanger equilibrated with the same buffer as in the medium, to thereby bind the negatively charged Group B and Type III antigens;

(f) eluting from the ion exchanger with a linear sodium chloride gradient of 0 to 0.75 M sodium chloride in the same buffer whereby the Group B antigen is eluted at 0.02 to 0.15 M sodium chloride, and the Type III antigen is eluted at 0.15 to 0.22 M sodium chloride;

(g) collecting each of Group B antigen and Type III antigen separately and buffering each with a buffer at pH 7, then eluting each through an agarose gel column containing 4% by weight of agarose, having a particle size of 40 to 190 microns and a fractionation range of 3×10^4 to 5×10^6 with the same buffer, and collecting pure Group B antigen and pure Type III antigen.

4,439,423

CHYMOPAPAIN AND METHOD FOR ITS USE

William S. Smith, Libertyville, Ill., assignor to Smith Laboratories, Inc., Rosemont, Ill.

Filed May 13, 1981, Ser. No. 263,197

Int. Cl.³ A61K *37/48*

U.S. Cl. 424—94 **17 Claims**

1. A pharmaceutical composition consisting of an effective

amount of a purified chymopapain product essentially free of proteolytically inactive component materials and characterized by the absence of precipitate formation when a 10% weight/volume solution of said purified chymopapain is acidified with hydrochloric acid followed by treatment with barium chloride; and a minor amount of a pharmaceutically acceptable, non-toxic, reducing agent said composition being further characterized as being free of bisulfite additives.

4,439,424

SYNTHETIC WHOLE BLOOD

Charles S. Ecanow, Skokie, and Bernard Ecanow, Wilmette, both of Ill., assignors to Neomed Inc., Wilmette, Ill.

Continuation of Ser. No. 222,364, Jan. 5, 1981, Pat. No. 4,343,797, which is a continuation-in-part of Ser. No. 146,029, May 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 47,021, Jun. 11, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,868

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.[3] **A61K** *33/14, 37/00*

U.S. Cl. 424—153 **23 Claims**

1. A semi-prepared synthetic whole blood product comprising about 0.855–0.675% weight to volume NaCl, about 0.75–4.75% weight to volume urea, about 0.0075–9.5% weight to volume of a phospholipid, about 63.07–73.5% weight to volume H_2O, and about 5–25% weight to volume albumin,said components forming a coacervate system having a coacervate phase and an equilibrium bulk water phase.

4,439,425

PEPTIDE DERIVATIVES

Lajos Tarcsay, Grenzach-Wyhlen, Fed. Rep. of Germany; Bruno Kamber, Ariesheim, Switzerland; Jaroslav Stanek, Birsfelden, Switzerland; Gerhard Baschang, Bettingen, Switzerland, and Albert Hartmann, Grenzach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

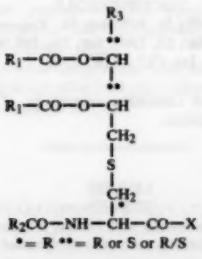
Continuation of Ser. No. 225,277, Jan. 15, 1981, abandoned, which is a continuation of Ser. No. 104,246, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 53,573, Jun. 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 915,699, Jun. 15, 9178, abandoned. This application Jun. 7, 1982, Ser. No. 385,594

Claims priority, application Switzerland, Dec. 20, 1979, 12942/78

Int. Cl.[3] **A61K** *37/00*

U.S. Cl. 424—177 **14 Claims**

1. Compounds of the formula



(I)

wherein R_1 and R_2 each represent a saturated or unsaturated aliphatic or mixed aliphatic-cycloaliphatic hydrocarbon radical which has 11–21 C atoms and which is unsubstituted or substituted by hydroxyl or epoxy, R_3 represents hydrogen or the radical $R_1—CO—O—CH_2—$, where R_1 has the same meaning, and X represents an amino acid X_1 or a sequence of 5 amino acids selected from the groups X_1–X_5, wherein

X_1 is selected from the group consisting of Ser, Phe, Glu, Val, Ala, Thr, D-Ser, D-Thr, Gln, Asn and Asp,

X_2 is selected from the group consisting of Ser, Phe, Glu, Ile, Lys, Thr, D-Ser, D-Phe, Gln, Asn and Asp,

X_3 is selected from the group consisting of Phe, Asn, Ile, Val, Gly, Ala, Tyr, D-Asn, D-Phe and D-Ala,

X_4 is selected from the group consisting of Ala, Phe, Tyr, Val, Glu, D-Glu and D-Ala and

X_5 is selected from the group consisting of Glu, Lys, Ala, Pro, D-Glu and Val, or X represents a sequence of amino acids resulting from the addition of any of the series Asp-Glu, Ala-Pro or -Ile-Asp-Glu to said 5 membered series, with the proviso that the amino acid X_1 and the sequence X_1–X_5 is different from Ser or any of the series -Ser-Ser-Asn-Ala-Lys, -Ser-Ser-Asn-Ala, -Ser-Ser-Asn and -Ser-Ser, respectively, in compounds of formula (I), the terminal carboxyl group being in the free form or the form of the amide or a substituted amide having one or two alkyl groups with 1–7 C atoms or in the form of an ester group having from 1 to 7 C atoms, the amino acids being natural ones in the case of compounds of formula (I), and to diastereomeric mixtures and salts of said compounds.

4,439,426

SEMISYNTHETIC MACROLIDIC ANTIBIOTICS, INTERMEDIATE COMPOUNDS FOR THEIR PREPARATION AND RELATED PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Luciano Toscano, Milan, Italy, and Leonardo M. Cappelletti, Fayetteville, N.Y., assignors to Pierrel S.p.A., Napoli, Italy

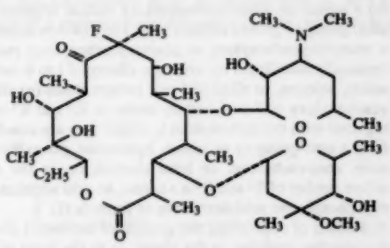
Filed Jan. 8, 1982, Ser. No. 338,105

Claims priority, application Italy, Jan. 9, 1981, 19082 A/81; Nov. 27, 1981, 25344 A/81; Nov. 27, 1981, 25346 A/81

Int. Cl.[3] **A61K** *31/71;* **C07D** *313/00;* **C07H** *17/08;* **C12P** *19/62*

U.S. Cl. 424—181 **25 Claims**

9. (8S)-8-fluoroerythromycin A, having the formula



or the pharmaceutically acceptable salts thereof.

16. Pharmaceutical composition containing an antibiotic-effective amount of a compound of any one of claims **9**, **10**, **11**, **12**, **13** or **14** with a pharmaceutically acceptable excipient therefor.

4,439,427

METHOD AND COMPOSITION FOR TREATING PEDICULOSIS

Joel E. Bernstein, Deerfield, Ill., assignor to Soft Sheen Products, Inc., Chicago, Ill.

Filed Oct. 18, 1982, Ser. No. 434,858

Int. Cl.[3] **A61K** *31/27, 31/685*

U.S. Cl. 424—199 **20 Claims**

1. A method of treating lice infestations comprising topically applying to the lice-infected area of a subject an effective amount of one or more of the pediculocide agents selected from the class consisting of the acid salts of demecarium, echothiopate, edrophonium, neostigmine, pyridostigmine and ambenonium; isoflurophate; and combinations thereof for a time sufficient to interrupt the breeding cycle of the lice.

4,439,428

HERBICIDE

John M. Cox, Bracknell, England, assignor to Imperial Chemical Industries PLC, London, England

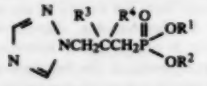
Filed Oct. 14, 1982, Ser. No. 434,227

Claims priority, application United Kingdom, Nov. 2, 1981, 8132982

Int. Cl.³ A01N 57/00; C07F 9/65

U.S. Cl. 424—200 7 Claims

1. A phosphonic acid derivative of the formula (I)



(I)

wherein R^1 and R^2 each represent a hydrogen atom; a cation; an alkyl radical of 1 to 6 carbon atoms, or an alkenyl or alkynyl radical of 3 to 6 carbon atoms each of which may be substituted with hydroxy, alkoxy of 1 to 6 carbon atoms, halogen or phenyl;

a cyclopentyl or cyclohexyl radical;

or a phenyl radical optionally substituted with hydroxy, alkoxy of 1 to 6 carbon atoms, halogen, or alkyl of 1 to 4 carbon atoms;

R^3 may be hydrogen or alkyl of 1 to 3 carbon atoms;

R^4 may be (a) hydrogen, hydroxy, fluoro, amino, (b) alkoxy of 1 to 6 carbon atoms or alkenyloxy or alkynyloxy of 2 to 6 carbon atom, the last three foregoing radicals being optionally substituted by halogen, alkoxy of 1 to 6 carbon atoms, carboxy, alkoxycarbonyl or phenyl, (c) alkylcarbonyloxy of 2 to 6 carbon atoms optionally substituted by halogen, phosphonomethylamino, or phenyl (d) benzoyloxy optionally substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, halogen, or alkyl of 1 to 4 carbon atoms (e) a mono- or dialkylcarbamoyloxy radical wherein the alkyl group or groups contain from 1 to 6 carbon atoms (f) a benzyloxycarbonyloxy or phenoxycarbonyloxy radical optionally substituted by hydroxy, alkoxy of 1 to 6 carbon atoms, halogen, or alkyl of 1 to 4 carbon atoms (g) alkoxycarbonyloxy of 2 to 6 carbon atoms or R^3 and R^4 may, together with the carbon atom to which they are attached, form a keto group or an oxime, hydrazone, phenylhydrazone, semi-carbazone, or ketal thereof; or, in the case where neither of R^1 and R^2 is a cation, an acid addition salt of a phosphonic acid derivative of formula (I).

7. A method of controlling the growth of unwanted plants, which comprises applying to the plants, or to the locus of the plants a herbicidal amount of a compound of formula (I) as defined in claim 1.

4,439,429

METHOD OF ALLEVIATING SYSTEMIC MYCOTIC INFECTIONS

Joseph E. Gray, Norwich, N.Y., assignor to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,859

Int. Cl.³ A61K 31/34

U.S. Cl. 424—285 1 Claim

1. A method for alleviating systemic mycotic infection caused by the organism *Torulopsis glabrata* which consists in perorally administering to a host in need of said treatment a composition containing an antimycotic effective amount of the compound 5-(p-chlorophenyl)-2-furaldehyde oxime.

4,439,430

O,O-DIETHYL O-[(P-TERTIARYBUTYLTHIO)PHENYL]PHOSPHOROTHIOATES AND ITS INSECTICIDAL USE

Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1981, Ser. No. 307,964

Int. Cl.³ A01N 57/14; C07K 9/165

U.S. Cl. 424—216 3 Claims

1. A method for killing and controlling the larvae of the western spotted cucumber beetle which comprises contacting said larvae or their habitat with a composition containing as an active ingredient an insecticidally effective amount of O,O-diethyl O-[4-(t-butylsulfinyl)phenyl]phosphorothioate in intimate admixture with an inert carrier.

2. The compound O,O-diethyl O-[4-(t-butylsulfinyl)phenyl]-phosphorothioate.

4,439,431

O,O-DIETHYL O-((4-TERTIARYBUTYLSULFONYL)M-TOLYL)PHOSPHOROTHIOATE AND ITS INSECTICIDAL USE

Walter Reifschneider, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1981, Ser. No. 307,980

Int. Cl.³ A01N 57/14; C07F 9/165

U.S. Cl. 424—216 4 Claims

1. A method for killing and controlling the copper bottle fly which comprises contacting said fly or their habitat with a composition containing, as an active ingredient, an insecticidally effective amount of O,O-diethyl O-(4-(t-butylsulfonyl)-m-tolyl) phosphorothioate in intimate admixture with an inert carrier therefor.

2. A method for killing and controlling the southern cattle tick which comprises contacting said tick or their habitat with a composition containing, as an active ingredient, an insecticidally effective amount of O,O-diethyl O-(4-(t-butylsulfonyl)-m-tolyl) phosphorothioate in intimate admixture with an inert carrier therefor.

3. The compound O,O-diethyl O-(4-(t-butylsulfonyl)-m-tolyl) phosphorothioate.

4,439,432

TREATMENT OF PROGESTERONE DEFICIENCY AND RELATED CONDITIONS WITH A STABLE COMPOSITION OF PROGESTERONE AND TOCOPHEROLS

Raymond F. Peat, 300½ N. Jefferson St., Eugene, Oreg. 97402

Filed Mar. 22, 1982, Ser. No. 360,587

Int. Cl.³ A61K 31/56

U.S. Cl. 424—240 10 Claims

1. A composition consisting essentially of progesterone solubilized in tocopherol.

4,439,433

OXIMES

Rene Heymes, Romainville, and Michel Vignau, Neuilly-sur-Seine, both of France, assignors to Roussel Uclaf, Paris, France

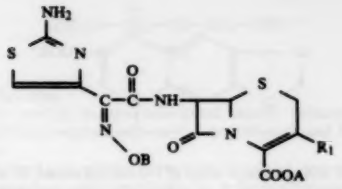
Division of Ser. No. 25,666, Mar. 30, 1979, abandoned. This application May 27, 1981, Ser. No. 267,638

Claims priority, application France, Mar. 31, 1978, 78 09617; Aug. 24, 1978, 78 24563

Int. Cl.³ A61K 31/545; C07D 501/34

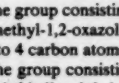
U.S. Cl. 424—246 20 Claims

1. A compound selected from the group consisting of oximes of the syn isomers of 7-[2-(2-amino-4-thiazolyl)-acetamido]-ceph-3-eme-4-carboxylic acid compounds of the formula



wherein B is $-(CH_2)_{n'}-R_5$, n' is an integer from 1 to 4, R_5 is

R_6 and R_7 are individually selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and when taken together with the nitrogen to which they are attached are selected from the group consisting of phthalimido and 1-pyridinyl, R_1 is selected from the group consisting of CH_3O-, alkyl and alkylthio of 1 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms, $-CH_2-S-R_{12}$, acetoxymethyl, carbamoyloxymethyl and



R_{12} is selected from the group consisting of 2-oxo-(3H)-thiazolin-4-yl-carbonyl, 3-methyl-1,2-oxazol-5-yl-carbonyl, acyl of an alkanoic acid of 2 to 4 carbon atoms and a nitrogen heterocycle selected from the group consisting of 1,2,3-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,4-thiadiazolyl, 1H-tetrazolyl, 1,3-thiazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,3,4-triazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl and 1,3,4-oxadiazolyl, the said heterocycles being optionally substituted with at least one substituent selected from the group consisting of methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, amino, hydroxycarbonylmethyl, dimethylaminoethyl and diethylaminoethyl, Alk_d is alkyl of 1 to 4 carbon atoms and A is selected from the group consisting of hydrogen, $-NH_4$, alkali metal, alkaline earth metal, magnesium, a non-toxic, pharmaceutically acceptable organic amine and easily cleaved ester and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An antibacterial composition comprising an antibacterically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

4,439,434

CEPHALOSPORIN DERIVATIVE AND PHARMACEUTICAL COMPOSITION CONTAINING THE DERIVATIVE

Shigeaki Muto, Tokyo; Kouichi Niimura, Sayama; Takao Ando, Tokyo; Masahiko Fujii, Komae; Takao Furusho, Machida, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

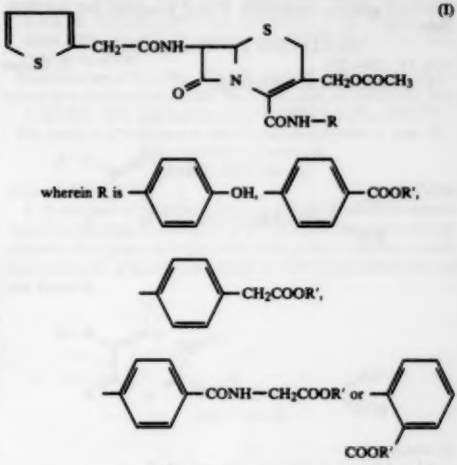
Filed Sep. 16, 1982, Ser. No. 418,761

Claims priority, application Japan, Sep. 18, 1981, 56-147577; Sep. 22, 1981, 56-149868

Int. Cl.³ A61K *31/545*; C07D *501/34*

U.S. Cl. 424—246 **23 Claims**

1. A cephalosporin derivative having the general formula (I);

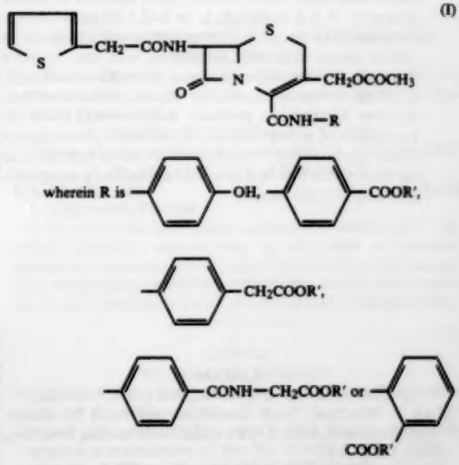


(I)

wherein R is

wherein R' is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal.

23. An antibacterial drug comprising 0.01 to 99.5% by weight of a cephalosporin derivative having the formula (I);



(I)

wherein R is

wherein R' is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or an alkali metal, and a pharmaceutically acceptable carrier therefor.

4,439,435

ISOUREAS AND ISOTHIOUREAS

Charon R. Ganellin, Welwyn; Robert J. Ife, Stevenage, and David A. A. Owen, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, England

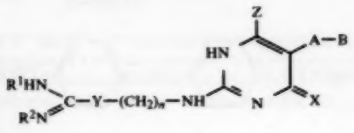
Division of Ser. No. 56,171, Jul. 10, 1979, Pat. No. 4,305,945. This application Aug. 6, 1981, Ser. No. 290,628

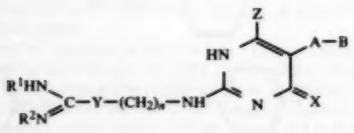
Claims priority, application United Kingdom, Jul. 15, 1978, 29999/78

Int. Cl.³ C07D *239/47;* A61K *31/505*

U.S. Cl. 424—251 **11 Claims**

1. A compound of the formula





in which

R^1 and R^2 are hydrogen or lower alkyl;

Y is sulphur or oxygen;

n is from 3 to 8;

X is oxygen or sulphur;

Z is hydrogen or lower alkyl;

A is straight or branched C_1–C_5 alkylene or $-(CH_2)_pW(CH_2)_q-$ where W is oxygen or sulphur and the sum of p and q is 1 to 4; and

B is methyl, C_3–C_6 cycloalkyl, a heteroaryl group selected from furyl, thienyl, thiazolyl, oxazolyl, isothiazolyl, imidazolyl, thiadiazolyl, benzimidazolyl and benzthiazolyl, said heteroaryl being optionally substituted by one or more lower alkyl, lower alkoxy, halo, hydroxy or amino groups or B is a naphthyl, 5- or 6-(2,3-dihydro-1,4-benzodioxinyl) or 4- or 5-(1,3-benzodioxolyl) group, or a phenyl group optionally substituted with one or more lower alkyl, lower alkoxy, halogen, phenyl(lower alkoxy), hydroxy, lower alkoxy-lower alkoxy, trifluoromethyl, di(lower alkyl)amino, phenoxy, halophenoxy, lower alkoxyphenoxy, phenyl, halophenyl or lower alkoxyphenyl group, or, provided A is alkylene, B can be hydrogen, in the form of the free base or a pharmaceutically acceptable acid addition salt thereof.

4,439,436

1,3-DIOXOLO(4,5-G)QUINOLINE COMPOUNDS

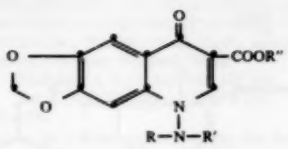
Mark P. Wentland, North Greenbush, and Denis M. Bailey, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 4, 1982, Ser. No. 405,263

Int. Cl.³ C07D *491/04;* A61K *31/47*

U.S. Cl. 424—258 **21 Claims**

1. A compound of the formula



where R is hydrogen or alkyl of 1–3 carbon atoms; R′ is hydrogen, formyl, alkyl of 1–3 carbon atoms, or alkoxycarbonyl where the alkyl moiety of the latter group is identical with R; and R″ is hydrogen or lower-alkyl; or an alkali metal salt or N-methylglucamine salt of a compound where R″ is hydrogen.

4,439,437

2-[2-THIAZOLYL OR 2-GUANIDINO-4-THIAZOLYL METHYLTHIOETHYL(OR BUTYL)AMINO]-3-(HYDROXY OR CARBOXY)PYRIDINES, COMPOSITIONS CONTAINING SAME AND METHOD OF USE

Martin Jones, Stevenage, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, United Kingdom

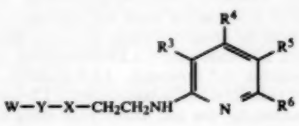
Filed Apr. 5, 1982, Ser. No. 365,224

Claims priority, application United Kingdom, Apr. 28, 1981, 8112986

Int. Cl.³ C07D *417/12;* A61K *31/44*

U.S. Cl. 424—263 **8 Claims**

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof where:

W is 2-thiazolyl or 2-guanidino-4-thiazolyl;

X is methylene or sulphur;

Y is methylene;

R^3 is carboxy or hydroxy;

R^4 is hydrogen or C_{1-4} alkyl;

R^5 is hydrogen, C_{1-4} alkyl or benzyl; and

R^6 is hydrogen or C_{1-4} alkyl.

8. A method of blocking histamine H_2-receptors which comprises administering to an animal in need of such treatment an effective amount to block said receptors of a compound according to claim 1.

4,439,438

ESTERS OF ACYL-CARNITINES, PROCESS FOR PREPARING SAME AND PHARMACEUTICAL COMPOSITIONS CONTAINING SUCH ESTERS

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

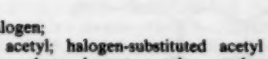
Continuation of Ser. No. 142,503, Apr. 21, 1980, abandoned. This application May 26, 1982, Ser. No. 382,319

Claims priority, application Italy, Apr. 23, 1979, 48816 A/79

Int. Cl.³ A61K *31/44;* C07C *211/72*

U.S. Cl. 424—263 **5 Claims**

1. Esters of acyl-carnitines represented by the general formula (I):



X is halogen;

R′ is: acetyl; halogen-substituted acetyl isobutyryl; β-hydroxy butyryl; acetoacetyl; pantothenyl and linoleyl; and

R″ is: methoxy, ethoxy, propyloxy, butyloxy, isopropyloxy, isobutyloxy, trichloroethyloxy, trifluoroethyloxy, 3-carbethoxy-2-propyloxy, 3-pyridyl-methoxy, 2-diethylaminoethoxy, 2-acetamido-3-methyl-butyroxy, 2-acetamido-4-methyl-penthyloxy, 2-acetamido-3-methyl-pentyloxy and 4-hydroxymethyl-5-hydroxy-6-methyl pyrid-3-yl methoxy radicals provided that when R″ is methoxy, ethoxy, propyloxy or butyloxy then R′ is not acetyl.

2. A method of treating depression comprising administering to a patient afflicted by depression an ester of formula (I) as defined in claim 1 in an amount effective in the treatment of depression.

4,439,439

NON-IRRITATING TETRAMISOLE- OR LEVAMISOLE POUR-ON CONPOSITIONS

John M. Ballany, Cumbernauld, Scotland, and David Henderson, Carlisle, England, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Mar. 10, 1982, Ser. No. 356,666

Int. Cl.³ A61K *31/425*

U.S. Cl. 424—270 **13 Claims**

1. A pour-on composition for combating helmintic infestations in non-human animals comprising from 4 to 30% by weight of dl- and/or 1-2,3,5,6-tetrahydro-6-phenylimidazo[2,1-b]thiazole in a liquid medium, said medium comprising at least 50% by weight of one or more alcohols of the formula

$$HO-(CH_2-CH_2-O)_m-R \qquad (I)$$

wherein m is the integer 1, 2 or 3; and R is a lower alkyl radical.

4,439,440

1-ALKOXYCARBONYLPHENYLCARBAMOYL-3-PHENYL-4-CYANOALKYL-2-PYRAZOLINES AND USE AS INSECTICIDES

Roelof van Hes, and Arnoldus C. Grosscurt, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

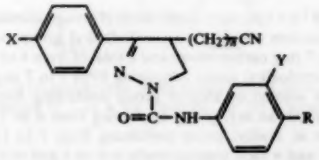
Filed May 7, 1982, Ser. No. 375,869

Claims priority, application Netherlands, May 12, 1981, 8102310

Int. Cl.³ A01N *43/56*; C07D *231/06*

U.S. Cl. 424—273 P **7 Claims**

1. A pyrazoline of the formula



wherein

R is an alkoxycarbonyl group having 2 to 6 carbon atoms,

X and Y are equal or different and represent hydrogen atoms or halogen atoms, and

n is 2, 3 or 4.

7. A method of controlling insects, characterized in that the infested area is treated with a composition as claimed in any one of claims 4–6 in a dosage from 0.01 to 1 kg of active substance per hectare.

4,439,441

CONTRACEPTIVE COMPOSITIONS AND METHODS EMPLOYING 1-SUBSTITUTED IMIDAZOLE DERIVATIVES

Duane W. Hallesy, Palo Alto; Richard E. Jones, Woodside; Brian H. Vickery, Cupertino, and Keith A. M. Walker, Los Altos Hills, all of Calif., assignors to SYNTEX (U.S.A.) Inc., Palo Alto, Calif.

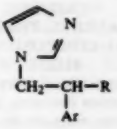
Continuation of Ser. No. 225,173, Jan. 15, 1981, abandoned, which is a continuation of Ser. No. 2,637, Jan. 11, 1979, Pat. No. 4,247,582. This application Jul. 19, 1982, Ser. No. 399,675

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **2 Claims**

1. A method of contraception in a female mammal comprising administering intravaginally, to a subject clinically asymptomatic of vaginal microbial infection, prior to coitus, a spermatostatically effective amount of a 1-substituted imidazole of the formula



wherein:

Ar is a member selected from the group consisting of phenyl, mono-, di- and tri-halophenyl, loweralkylphenyl, nitrophenyl, cyanophenyl and trifluoromethyl phenyl, and

R is a member selected from the group consisting of alkyl, having from 1 to 10 carbons, cycloalkyl, lower alkenyl, aryl-lower alkyl and aryl-loweralkenyl, said aryl being a member selected from the group consisting of phenyl, mono-, di- and trihalophenyl, loweralkylphenyl, loweralkyloxyphenyl, nitrophenyl and trifluoromethylphenyl;

or a pharmaceutically acceptable acid addition salt thereof.

4,439,442

NAFTIDROFURYL CITRATE AND THERAPEUTIC APPLICATIONS

Jacques A. Chick, Sevres; Alain Heymes, Sisteron, and Carlo Blasioli, Toulouse, all of France, assignors to SANOFI, Toulouse, France

Filed May 14, 1982, Ser. No. 378,333

Claims priority, application France, May 14, 1981, 81 09590

Int. Cl.³ A61K *31/34*; C07D *307/16*

U.S. Cl. 424—285 **6 Claims**

1. Naftidrofuryl citrate.

5. A method for promoting cardiovasular activity in a host which comprises administering to said host an effective amount of the compound of claim 1 and a biologically acceptable carrier and stimulating cardiovasular activity and vasodilation, the vasodilation being of delayed and prolonged effect.

4,439,443

SNAKE BITE THERAPY

Eugene L. Giroux, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

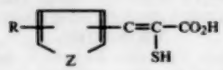
Division of Ser. No. 290,906, Aug. 7, 1981, Pat. No. 4,347,255, which is a continuation of Ser. No. 140,446, Apr. 17, 1980, abandoned. This application Jul. 2, 1982, Ser. No. 394,967

Int. Cl.³ A61K *31/34*, *31/38*, *31/40*

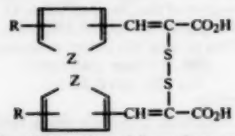
U.S. Cl. 424—285 **6 Claims**

1. A method of reducing local hemorrhage and tissue necro-

sis in mammals resulting from the bite or sting of a venomous snake which comprises administering to said mammal a local hemorrhage and tissure necrosis reducing amount of a compound having the formula



or a corresponding disulfide of the formula



wherein Z is S and R is selected from the group consisting of H, methyl, ethyl, hydroxy, methoxy, ethoxy, fluoro, chloro, bromo, iodo and trifluoromethyl; or a pharmaceutically acceptable salt thereof.

4,439,444

AMIDOBENZAMIDES, THEIR SALTS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Dino Nisato, Pavia; Sergio Boveri, Tortona; Alberto Bianchetti, Milan, all of Italy; Romeo Roncucci, Paris, France, and Paolo Carminati, Milan, Italy, assignors to Sanofi, Paris, France

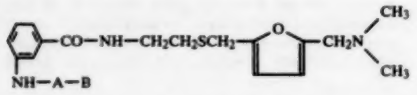
Filed Jul. 7, 1982, Ser. No. 396,100

Claims priority, application France, Jul. 8, 1981, 81 13420; Oct. 23, 1981, 81 19967; Dec. 10, 1981, 81 23084

Int. Cl.³ A61K *31/34;* **C07D** *307/54*

U.S. Cl. 424—285 **6 Claims**

1. An amidobenzamide selected from the group consisting of compounds of formula



wherein A represents a CO or SO_2 group and B represents an alkyl group of from 1 to 6 carbon atoms or a phenyl, pyridyl, pyridyl 1-oxyde, pyrazinyl or thienyl group; or a pharmaceutically acceptable acid addition salt thereof.

4,439,445

CYTOPROTECTIVE USE OF OXAMATE DERIVATIVES

Andre Robert, and Cleo Lancaster, both of Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 8, 1982, Ser. No. 366,818

Int. Cl.³ A61K *31/275, 31/24, 31/195, 31/44*

U.S. Cl. 424—304 **3 Claims**

1. A method for preventing gastrointestinal ulcers, in a mammal highly susceptible to said ulcers, due to one of the following conditions:

(a) a previous history of gastric or duodenal ulcer,

(b) stressful environmental conditions,

(c) chronic and excessive alcohol consumption,

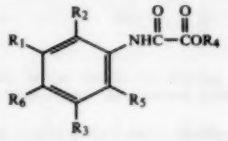
(d) exposure to cytodestructive doses of ionizing radiation,

(e) acute or chronic ingestion of noxious, gastrointestinal cytodestructive or gastrointestinal cytotoxic chemical agents,

(f) treatment with non-steroidal antiinflammatory compounds (NOSAC), or

(g) exposure to pathogens capable of producing untoward gastric symptoms; which comprises:

administering systemically to said mammal an amount effective to prevent the development of said ulcers of a compound of the Formula I



I

wherein R_1 is hydrogen, —NH—CO—CO—OR_4, —NH—CO—CO—$N(CH_3)_2$, —NO_2 or —NH_2;

wherein R_2 is hydrogen, —NO_2, chloro, fluoro, bromo, —COOH, or —C≡N;

wherein R_3 is hydrogen, acetyl, carboxy, —CF_3, or —C≡N;

wherein R_4 is hydrogen or (C_1–C_3)alkyl;

wherein R_5 is hydrogen, hydroxy, or —C≡N; and

wherein R_6 is hydrogen, —NO_2, or —NH—(-CO—CO—OR_4; and the pharmacologically acceptable acid addition salts thereof when R_2, R_3 or R_5 is —C≡N; with the following provisos:

(1) at least one of R_2, R_3, R_5 and R_6 is other than hydrogen and

(2) R_6 is —NH—CO—CO—OH only when R_1 is not hydrogen.

4,439,446

FLUORINE-CONTAINING OXYIMINOCYCLOPROPANECARBOXYLATES

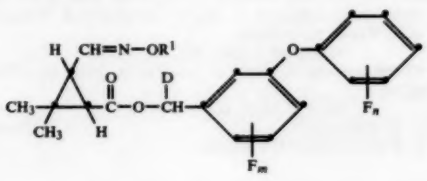
Samuel B. Soloway, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 332,621, Dec. 21, 1981, abandoned. This application Sep. 13, 1982, Ser. No. 416,418

Int. Cl.³ A01N *53/00;* **C07C** *69/743, 121/78*

U.S. Cl. 424—304 **17 Claims**

1. A compound of the formula



wherein R^1 is a hydrogen atom; an alkyl group containing from 1 to 10 carbon atoms; a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms and a total of from 4 to 9 carbon atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl or alkynyl group containing from 2 to 4 carbon atoms; an aryl group containing from 6 to 12 carbon atoms; or an aralkyl group containing from 7 to 11 carbon atoms; m and n each independently is 0 or 1 and m+n is 1 or 2; and D is a hydrogen atom, a cyano group or an ethynyl group, with the proviso that when D is cyano or ethynyl then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

17. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of a compound according to claim 1.

4,439,447
FUNGICIDAL ACYL ANILIDES

Adolf Hubele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 101,355, Dec. 7, 1979, Pat. No. 4,294,850, which is a division of Ser. No. 923,604, Jul. 11, 1978, Pat. No. 4,206,228, which is a division of Ser. No. 723,826, Sep. 16, 1976, Pat. No. 4,151,299, which is a continuation of Ser. No. 565,037, Apr. 4, 1975, abandoned. This application Jun. 15, 1981, Ser. No. 273,801

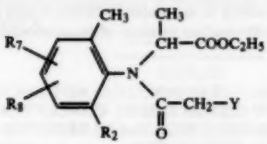
Claims priority, application Switzerland, Apr. 9, 1974, 4995/74; Mar. 14, 1975, 3259/75

The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl.³ A01N *37/10*; **C07C** *149/40, 101/44*

U.S. Cl. 424—309 **14 Claims**

1. A compound of the formula



wherein

R_2 represents methyl, ethyl or chlorine,

each of R_7 and R_8 independently represents hydrogen or methyl, and

Y represents —OR_4 or —SR_4 in which R_4 represents methyl, ethyl, propyl, isopropyl, butyl, sec.butyl or tert.butyl.

6. A method of combating phytophathogenic fungi which comprises applying thereto a fungicidally effective amount of a compound according claim 1.

4,439,448
GLUTAMINE DERIVATIVES

Hiroaki Munakata, Sagamihara; Makio Kobayashi, Machida; Kazuo Wagatsuma, Machida; Shigeru Sato, Machida; Makoto Tsurufuji, Tokyo; Hiroshi Enomoto, Kyoto, all of Japan, and Shingo Matsumura, deceased, late of Kyoto, Japan (by Rumiko Matsumura, administrator), assignors to Mitsubishi Chemical Industries Ltd., Tokyo and Nippon Shinyaku Co., Ltd., Kyoto, both of, Japan

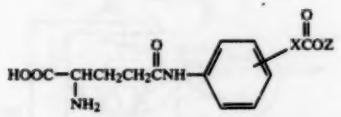
Filed Nov. 10, 1981, Ser. No. 319,992

Claims priority, application Japan, Nov. 12, 1980, 55-159319; Nov. 12, 1980, 55-159320

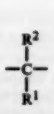
Int. Cl.³ C07C *101/447, 101/453*; **A61K** *31/24, 31/195*

U.S. Cl. 424—309 **7 Claims**

1. Glutamine derivative of the formula:



wherein X is (i) an alkylene of the formula: $(—CH_2—)_n$ where n is an integer of 1 to 4, or vinylene, or (ii) a group of the formula:



where R^1 and R^2 may be the same or different and are hydrogen or a lower alkyl with the proviso that at least one of R^1 and R^2 is a lower alkyl; and Z is hydrogen or a lower alkyl or a nontoxic salt thereof.

6. An immunomodulating composition comprising an effective amount of at least one compound represented by the formula (I) as described in claim 1 and at least one non-toxic carrier.

4,439,449
MEDICAMENT FOR DIMINUTION OF OXALATE DEVELOPMENT AND EXCRETION IN URINE

Dieter Hötzel, Sankt Augustin, Fed. Rep. of Germany, assignor to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 957,968, Nov. 6, 1978, abandoned. This application Nov. 24, 1981, Ser. No. 324,502

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749618

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **8 Claims**

1. Method for the relapse-prophylactive treatment of undesired uroliths, which method comprises treating a subject with an effective amount of benzoic acid.

4,439,450
TREATMENT OF THE BLOOD-BRAIN BARRIER WITH IBUPROFEN

James H. Coleman, Cumberland, R.I., assignor to The Upjohn Manufacturing Company M, Barceloneta, P.R.

Filed Jun. 30, 1983, Ser. No. 509,906

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **2 Claims**

1. A process for therapeutic treatment of the blood-brain barrier comprising the systemic administration to a human or animal having a damaged blood-brain barrier of an effective amount of p-isobutylhydratropic acid or an alkyl ester of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, or a pharmacologically acceptable salt thereof.

4,439,451
TREATMENT OF THE BLOOD-BRAIN BARRIER WITH FLURBIPROFEN

James H. Coleman, Cumberland, R.I., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 30, 1983, Ser. No. 509,905

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **2 Claims**

1. A process for therapeutic treatment of the blood-brain barrier comprising the systemic administration to a human or animal having a damaged blood-brain barrier of an effective amount of 3-fluoro-4-phenylhydratropic acid or an alkyl ester of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, or a pharmacologically acceptable salt thereof.

4,439,452
CLASS OF ANALGESICS AND/OR ANTI-INFLAMMATORY AGENTS CONSISTING OF INHIBITORS OF BREAKDOWN OF ENDOGENOUS ENKEPHALIN AND/OR ENDORPHIN, AND COMBINATIONS OF SAID ANALGESICS WITH ANTIPYRETIC, ANTI-INFLAMMATORY (ASPIRIN-TYPE) DRUGS

Seymour Ehrenpreis, 4339 Birchwood Ave., Skokie, Ill. 60076; Joseph E. Comaty, Des Plaines, and Reuben C. Balagot, Chicago, both of Ill., assignors to Seymour Earenpreis, Skokie, Ill.

Continuation-in-part of Ser. No. 12,043, Feb. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 882,975, Mar. 3, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 75,663

Int. Cl.³ A61K *31/195, 31/615*

U.S. Cl. 424—319 **14 Claims**

1. A method for effecting anti-inflammatory relief in animals

or humans by the step of administering to the animal or human suffering inflammation a substance intended to inhibit the destruction of endogenous substances such as enkephalins and endorphins, the substance administered being D-phenylalanine in an effective amount for effecting anti-inflammatory relief.

4,439,453

DIRECTLY COMPRESSIBLE ACETAMINOPHEN GRANULATION

Stephen H. Vogel, Collinsville, Ill., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 219,290, Dec. 22, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,212

Int. Cl.³ A61K *9/16, 9/34, 9/60, 9/62*

U.S. Cl. 424—324 **15 Claims**

1. A directly compressible analgesic granulation comprising from about 80% to about 90% by weight acetaminophen, from about 0.1% to about 5.0% by weight ground crosslinked sodium carboxymethylcellulose fiber, from about 1.0% to about 15.0% binder and from about 0.1% to about 2.0% by weight lubricant.

4,439,454

PROCESS FOR CHOLINE AND VITAMIN STABILIZATION

Giuseppe Riva, Piazza Repubblica, 1, 24100 Bergamo, Italy

Filed Jun. 15, 1981, Ser. No. 274,001

Claims priority, application Italy, Jun. 24, 1980, 2918 A/80

Int. Cl.³ A61K *31/14;* **C07D** *211/72, 211/84, 213/70*

U.S. Cl. 424—329 **7 Claims**

1. A process for stabilizing choline by preparing a non-hygroscopic form thereof, comprising the steps of:

(a) forming a reaction mixture containing about 32–77.1% by weight choline chloride, about 7.1–14.88% by weight formurea and about 7.8–11.8% by weight urea;

(b) adding from 0% to about 53% by weight of a vitamin supplement;

(c) heating the reaction mixture to about 45°–85° C.; and

(d) adding from 0% to about 1.24% by weight of 18.5% hydrochloric acid to said reaction mixture; whereby said reaction mixture forms a solidified reaction product.

4,439,455

ENZYMATIC TREATMENT OF WINE AND MUST

Jean-Claude Villettaz, Arlesheim, Switzerland, assignor to Novo Industri A/S, Denmark

Filed Jun. 10, 1982, Ser. No. 387,204

Claims priority, application Denmark, Jun. 11, 1981, 2532/81

Int. Cl.³ C12G *1/00, 1/02;* **C12R** *1/885*

U.S. Cl. 426—12 **8 Claims**

1. A process for improving the filterability of must from Botrytis infected grapes and of wine produced by fermentation thereof, which comprises contacting said must or wine with a glucanase product exhibiting betaglucanase activity produced by *Trichoderma harzianum* in amount effective to improve filterability for between 8 hours and 2 weeks at a temperature in the range of from 15° C. to 50° C. and at a pH in the range of from 3 to 5.

4,439,456

PROCESS FOR PRODUCING FIBROUS FOOD PRODUCTS

Youichi Kammuri; Takafumi Yamauchi, and Toshikatsu Takahashi, all of Hachioji, Japan, assignors to Nippon Suisan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1981, Ser. No. 330,893

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—276 **4 Claims**

1. A process for producing a fibrous food product which comprises the steps of: adding 1–10% sodium chloride to fish and/or animal meat; kneading the resulting mixture to prepare a paste; and extruding the paste into an aqueous solution of a protein denaturing agent through a nozzle having fine orifices to produce filaments.

4,439,457

AGRICULTURAL APPLICATIONS OF THIXOTROPIC ALUMINUM HYDROXIDE CHLORIDE

Bert Kuy, Holzestrasse 28, Zurich 8042, Switzerland

Division of Ser. No. 169,479, Jul. 15, 1980, Pat. No. 4,355,020, which is a continuation-in-part of Ser. No. 957,333, Nov. 3, 1978, abandoned. This application Oct. 18, 1982, Ser. No. 434,831

Claims priority, application United Kingdom, Nov. 12, 1977, 47170/77

Int. Cl.³ A23B *7/16;* **A23L** *3/34*

U.S. Cl. 426—310 **1 Claim**

1. A method for protecting fruits or vegetables from decay comprising applying to the fruit or vegetable an effective amount in the form of a thin layer of a thixotropic aluminum hydroxide chloride having an aluminum to chlorine ratio of 5:1 to 6:1 which is the chlorination product of pseudoboehmite.

4,439,458

PREPARATION OF CITRUS JUICES, CONCENTRATES AND DRIED POWDERS WHICH ARE REDUCED IN BITTERNESS

Ajai Puri, Altamonte Springs, Fla., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Apr. 26, 1982, Ser. No. 371,861

Int. Cl.³ A23L *2/00*

U.S. Cl. 426—330.5 **19 Claims**

1. A process for reducing either flavanoid or limonoid induced bitterness in citrus fruit juice or both flavanoid and limonoid induced bitterness in citrus fruit juice, wherein said process comprises:

contacting the citrus juice for an effective period of time with an effective volume of a styrene-divinylbenzene cross-linked copolymer absorbent resin in the absence of an added enzyme, whereby a substantial amount of flavanoid and limonoid compounds present in the citrus juice are adsorbed by the resin.

4,439,459

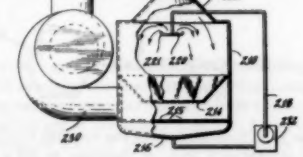
CONVECTION FOOD HEATING

John S. Swartley, 7 Wendy La., Westport, Conn. 06880

Filed Mar. 8, 1982, Ser. No. 356,229

Int. Cl.³ A23L *1/00;* **A47J** *37/00;* **A21B** *1/00*

U.S. Cl. 426—438 **16 Claims**



1. A process for frying food which comprises: placing food on a foraminous support within a heating chamber, creating a flow of air about a heat source to increase the temperature thereof to a predetermined temperature sufficient to fry said food when admixed with a liquid heat exchange medium comprising a fat, circulating said air flow about the food within said chamber while introducing said heat exchange medium into said air flow, and continuously circulating the air containing

dispersed fat between the food and said heat source for a period of time sufficient to fry said food.

4,439,460

DIPEPTIDE SWEETENER SULFATE AND SULFONATE SALTS

Josef H. Tsau, Prospect Heights, and James G. Young, Northbrook, both of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 1, 1982, Ser. No. 383,393
Int. Cl.³ A23L *1/236*
U.S. Cl. 426—548 **9 Claims**

1. A dipeptide sweetener salt of the formula

$$[APM.H]_2SO_4 \text{ or } [APM.H]SO_3R$$

wherein APM represents aspartyl-phenylalanine methyl ester and R is lower alkyl containing 1 to 3 carbon atoms.

4. A sweetened food comprising a mixture of dry, fatty or oily foodstuff ingredients in combination with a sweetener salt of claim 1.

4,439,461

PROCESS FOR CHILLING AND PLASTICIZING FATTY MATERIALS

Ted S. Czyzewski, Bloomingdale, and Bartley A. Greenwell, Crystal Lake, both of Ill., assignors to Groen Division - Dover Corporation, Elk Grove Village, Ill.

Filed Mar. 11, 1982, Ser. No. 356,958
Int. Cl.³ A23D *5/02*
U.S. Cl. 426—601 **3 Claims**

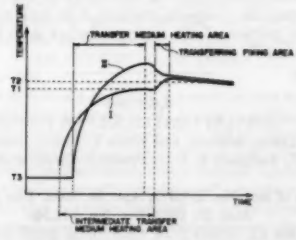
1. A process for chilling and plasticizing a fatty material comprising the steps of cooling and partially crystallizing a molten fatty material in a first zone and at a first temperature, and conveying said cooled and partially crystallized fatty material from said first zone to a second zone wherein a shearing action is imparted to said partially crystallized fatty material that is provided by a motionless mixer which causes a rotational circulation of said material around its own hydraulic center to cause radial mixing of said material, thereby producing a plasticized fatty material having a fine crystal structure which is well distributed and in substantial equilibrium.

4,439,462

METHOD FOR TRANSFERRING AND FIXING A TONER IMAGE

Noriyoshi Tarumi; Kiyoshi Kimura; Hiroshi Tokunaga; Yukio Okamoto, and Makoto Tomono, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1982, Ser. No. 361,540
Claims priority, application Japan, Apr. 3, 1981, 56-49298
Int. Cl.³ G03G *13/16*
U.S. Cl. 427—14.1 **4 Claims**



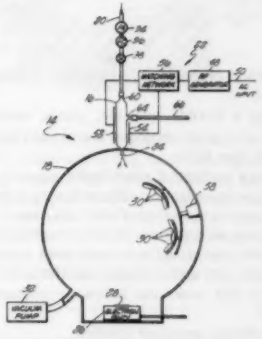
1. In the method of transferring a toner image on a toner image carrier onto a transfer medium by bringing the former into pressure contact with the latter, and subsequently applying said transferred image onto transfer material over a transferring fixing contact area, the improvement comprising the steps of heating the transfer medium bearing the toner image to a temperature at which the toner remains in a nonfluid condition immediately prior to said transferring fixing contact area, heating said transfer material to a temperature substantially greater than the melting temperature of the toner immediately prior to said transferring fixing contact area, and bringing said super-heated transfer material into pressure contact with the under-heated transfer medium throughout said transferring fixing contact area, whereby the super-heated transfer material raises the temperature of the under-heated transfer medium to a temperature sufficient to effect transfer of the toner image from the transfer medium to the transfer material.

4,439,463

PLASMA ASSISTED DEPOSITION SYSTEM

Stephen C. Miller, Simi Valley, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 18, 1982, Ser. No. 349,892
Int. Cl.³ C23C *11/00*
U.S. Cl. 427—39 **2 Claims**



1. A process for use in the deposition of a semiconductor film, comprising:

producing a stream of reactive gaseous species within a first chamber by exposing a flow of a gaseous material to an electrical discharge, the reactive species containing a semiconductor material;

passing the reactive species to a work environment which is distinct from the first chamber and is maintained at substantially atmospheric pressure; and

continuously depositing the semiconductor material from the reactive species onto a substrate passed through the work environment.

4,439,464

COMPOSITION AND METHOD FOR FORMING AMORPHOUS CHALCOGENIDE FILMS FROM SOLUTION

Imants R. Lauks, Sewell, N.J., assignor to University Patents, Inc., Norwalk, Conn.

Filed May 11, 1982, Ser. No. 377,222
Int. Cl.³ G03C *5/00*
U.S. Cl. 427—76 **9 Claims**

1. A method of forming an amorphous chalcogenide film on a substrate, comprising the steps of:

(a) preparing a solution containing a glass-forming chalcogenide compound dissolved in a non-aqueous vaporizable solvent, said solution being substantially free from particulate or crystallizable material;

(b) coating said solution onto said substrate in a non-vacuumized environment; and

(c) evaporating the solvent from the coating so as to form an

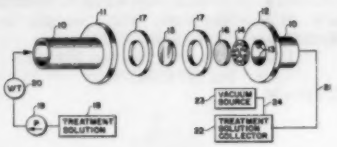
amorphous chalcogenide film substantially free from particulate and microstructure.

4,439,465

METHOD OF MAKING A LIGHT WEIGHT BATTERY PLAQUE

Margaret A. Reid; Robert E. Post, both of Bay Village, and Daniel G. Soltis, Broadview Heights, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 19, 1982, Ser. No. 350,476
Int. Cl.³ B05D 5/12; H01M 6/00
U.S. Cl. 427—115 14 Claims



1. A method of making a nickel battery plaque comprising the steps of:

providing a flexible, platable, plastic substrate having a nickel wire grid embedded therein and having a porosity greater than 65%;

providing a perforated non-platable support member;

providing a non-platable diffuser having a porosity substantially greater than that of said substrate;

sandwiching said diffuser between said substrate and said support member and in contact with each;

flowing through said substrate, said diffuser and said support plate in that order the following solutions in the order named:

a nickel plating sensitizer solution;

water;

a nickel plating catalyst solution;

water; and

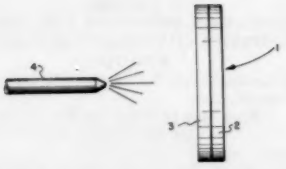
a nickel electroless plating solution.

4,439,466

RANEY NICKEL ELECTRODE FOR NI-H_2 CELL

Alan K. P. Chu, Granada Hills, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 1, 1983, Ser. No. 481,440
Int. Cl.³ B05D 1/08, 5/12
U.S. Cl. 427—123 9 Claims



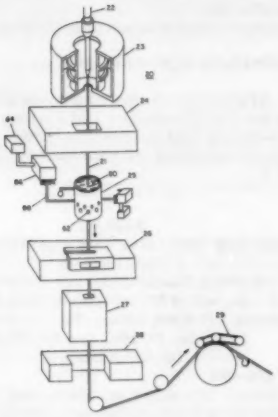
1. A method for making a Raney nickel electrode body without a pressure compacting step comprising providing a substrate, coating said substrate with a Raney nickel-aluminum alloy by plasma deposition, coating said body with a hydrophobic material, and leaching said coated body to remove at least part of the aluminum out of said Raney alloy coating and provide a coated porous electrode body.

4,439,467

METHODS OF COATING LIGHTGUIDE FIBER AND PRODUCT PRODUCED THEREBY

Bahiru Kassahun, Roosevelt Township, Monmouth County, and Montri Viriyayuthakorn, Hamilton Township, Mercer County, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 15, 1982, Ser. No. 418,317
Int. Cl.³ G02B 5/14; B05D 7/20
U.S. Cl. 427—163 4 Claims



1. A method of coating an elongated material to provide a substantially bubble-free covering, said method including the steps of:

advancing the elongated material through a continuum of liquid coating material, which extends from a free surface in a reservoir through communicating first and second dies at a velocity which causes air to become entrained in the coating material, the advancing of the elongated material being in a direction from the reservoir to the second die and causing a pressure gradient to be established between the reservoir and an exit orifice of the second die with the pressure increasing from the free surface to a location prior to the exit orifice of the second die; and

flowing coating material into the vicinity of the exit orifice of the first die at a pressure which sufficiently enhances the pressure gradient between portions of the first die and second die and which establishes sufficient volumetric flow of the coating material from a chamber into the reservoir to cause the removal of bubbles from the elongated material and to cause the coating material in the chamber and on the coated elongated material to be substantially bubble-free and removing bubble entrained fluid entering the reservoir through fluid exit means in the lower portion of the reservoir before such bubbles can substantially coalesce.

4,439,468

PLATINUM COATED SILVER POWDER

Anthony Liang, Belmont, and Hsiao L. Cheng, Sunnyvale, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 257,073, Apr. 24, 1981. This application Aug. 25, 1982, Ser. No. 412,366
Int. Cl.³ C09D 5/24; C23C 3/02; B22F 1/02
U.S. Cl. 427—216 2 Claims

1. A process for producing a platinum coated silver powder comprising

(a) forming a first composition of a slurry comprising of from about 20 to about 30% by weight of a relatively

finely divided silver powder relatively uniformly dispersed in said slurry, from about 0.3 to about 0.4% by weight of lignosulfonate and from about 0.7 to about 1.5% by weight of ammonia, balance water,

(b) forming a second composition of a slurry comprising from about 5 to about 7.5% by weight of platinum as a platinum-ammonium complex as a solid, relatively uniformly dispersed in a water soluble alkanol,

(c) mixing a sufficient ammount of said second compositions with said first composition to achieve a weight ratio of Ag to Pt from about 90:10 to about 95:5,

(d) adjusting the pH of said mixture of from about 8 to about 10,

(e) adding a sufficient amount of hydrazine to said mixture to achieve a weight ratio of hydrazine to platinum of from about 7 to 5,

(f) maintaining the resultant slurry at a temperature of from about 40° C. to about 60° C. for a sufficient time to coat essentially all of said platinum onto said silver and

(g) separating the platinum coated silver powder from the remainder of the slurry.

4,439,469

FORMATION OF A LINING IN PIPELINES

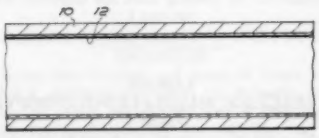
Eric Wood, Northants, England, assignor to Insituform International N.V., Curacao, Netherlands Antilles

Filed Mar. 4, 1982, Ser. No. 354,756

Claims priority, application United Kingdom, Mar. 5, 1981, 816942

Int. Cl.³ B05D *7/22, 1/28, 1/02, 1/36*

U.S. Cl. 427—230 **7 Claims**



1. A method of forming a lining in a pipeline, which method comprises the steps of

(a) forming on the inner surface of the pipeline a film of initiator,

(b) depositing on the inner surface of the film of initiator produced in accordance with step (a) a layer of resin whereupon accelerated curing of the resin takes place,

(c) repeating steps (a) and (b) any desired number of times until a cured lining of the desired thickness has been built up on the interior of the pipeline.

4,439,470

METHOD FOR FORMING TERNARY ALLOYS USING PRECIOUS METALS AND INTERDISPERSED PHASE

George K. Sievers, 1110 Kenwood St., Burbank, Calif. 91505, assignor to George Kelly Sievers, Burbank, Calif.

Continuation-in-part of Ser. No. 207,246, Nov. 17, 1980, Pat. No. 4,352,840. This application May 7, 1982, Ser. No. 376,107

Int. Cl.³ C23C *11/00, 13/00*

U.S. Cl. 427—252 **31 Claims**

1. Method of forming on a nickel, cobalt or iron base metal structure a diffusion coating case of a preselected thickness and containing a precious metal ternary alloy and an interdispersed phase to impart improved corrosion, erosion and wear properties to a surface of said structure, which includes applying onto said structure surface an adherent layer of a precious metal in an amount less than normally required for a case of said preselected depth, applying a layer of an interdispersed phase-forming discrete particulate matter to said surface in a predetermined amount, forming a ternary alloy of said base metal, said precious metal and an alloying element by interdiffusing under nonoxidizing conditions said layer-applied structure surface from a diffusion pack containing said alloying element, and distributing said predetermined amount of interdispersed phase-forming matter as a separate entity comprising discrete particulate matter through said ternary alloy sufficient to increase the thickness of said ternary alloy containing case on said structure surface to said preselected thickness, whereby said case has the corrosion resistance properties characteristic of said ternary alloy, and the erosion and wear properties characteristic of said interdispersed phase matter.

4,439,471

TENNIS BALL WITH FABRIC COVERING

Francois R. Lacoste, Neuilly sur Seine, and Francoise M. H. Biard, Paris, both of France, assignors to Patentex S.A., Fribourg, Switzerland

Continuation of Ser. No. 51,046, Jun. 22, 1979, abandoned, which is a continuation of Ser. No. 808,028, Jun. 20, 1977, abandoned. This application Oct. 14, 1980, Ser. No. 196,865

Claims priority, application France, Jun. 21, 1976, 76 18777

Int. Cl.³ A63B *39/00*

U.S. Cl. 428—35 **19 Claims**

1. A tennis ball comprising a hollow elastic core, a textile covering, and an adhesive bonding said covering to said core, said covering comprising fibers including monofilament synthetic fibers, the percentage-weighted average denier size of all fibers in said covering being at least 18;

the specific weight of all said fibers in the volume comprised between the outer surface of said core and the outer surface of said ball being less than 0.22 g/cm³.

4,439,472

UPHOLSTERY COMPONENTS

Raymond W. H. Bell, Great Kingshill, England, assignor to Dunlop Limited, London, England

Continuation of Ser. No. 171,818, Jul. 24, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,821

Int. Cl.³ B32B *3/26, 5/18*

U.S. Cl. 428—71 **5 Claims**

1. An upholstery component which retards smouldering, comprising:

an unimpregnated core made of flame-collapsible polyurethane foam which collapses on application of a flame thereto, thereby presenting a reduced surface area of the flame without sustained burning; and

a layer of a non-flame-collapsible foam material wrapped about said core, said layer having been impregnated with a flame-retardant substance, said substance being a suspension of a hydrated alumina in a latex, whereby said layer and said core cooperate to produce said upholstery component.

4,439,473

HYDROPHOBIC FOAM FABRIC COATING

Jerry Lippman, 7855 Boulevard East, North Bergen, N.J. 07047

Filed Sep. 30, 1982, Ser. No. 430,781

Int. Cl.³ B32B *5/18;* **B05D** *3/02*

U.S. Cl. 428—90 **25 Claims**

1. An open cell foam coated fabric comprising a fabric substrate and a breathable fine cell foam coating adhered to the fabric substrate, wherein the foam coating is comprised of an open cell foam polymer lattice, and a hydrophobic material which coats substantially all of the surfaces of the polymeric lattice, and renders the breathable foam coating water repellant and waterproof.

4,439,474

DISPOSABLE FLOOR MAT WITH IMPROVED WET SOIL ABSORPTIVITY

Paul J. Sagel, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 30, 1981, Ser. No. 316,477
Int. Cl.³ B32B *33/00*
U.S. Cl. 428—90 **12 Claims**

1. A fibrous floor mat comprising: a primary mat backing and assembled fibers, the bases of which are attached to said primary backing; characterized in that said fibrous mat has a surfactant disposed thereon at a level of less than 0.5 surfactant/mat weight ratio percent, wherein said mat has a Surfactant Mobility Test contact angle value of from 75° to 86°, whereby a minimal amount of surfactant and wet soil would be tracked off the mat, and wherein said mat has significantly improved wet soil absorbency performance over a fibrous floor mat without any surfactant disposed thereon according to the Wet Soil Absorbency Test.

4,439,475

NAP MAT OR CARPET OF WASHABLE TYPE HAVING INCREASED LIQUID REMOVAL THEREFROM DURING WASHING THEREOF

Aage Lang, Kolind, Denmark, assignor to Clean-Tex, Morke, Denmark

Filed Apr. 30, 1982, Ser. No. 373,688
Claims priority, application Denmark, May 26, 1981, 2287/81
Int. Cl.³ B32B *3/02*
U.S. Cl. 428—92 **15 Claims**

1. Floor covering such as a nap mat or carpet of the washable type having a nap of fibers on the face side thereof and a rubber-like backing material on the other side thereof, said backing material having a plurality of perforations formed therein which are normally closed and are opened upon the application of a pressing force on the face side of said floor covering.

4,439,476

TUFTED FABRICS AND METHOD OF MAKING

George A. Guild, Kirriemuir, Scotland, assignor to Don Brothers, Buist P.L.C., Scotland

Continuation of Ser. No. 212,014, Dec. 1, 1980, abandoned. This application Dec. 21, 1982, Ser. No. 451,817
Claims priority, application United Kingdom, Nov. 29, 1979, 7941164
Int. Cl.³ B32B *3/02*; A46D *1/00*
U.S. Cl. 428—96 **16 Claims**

1. A tufted pile fabric comprising a primary backing, meltable fibrous material needled through said backing to provide a first surface-covering layer on one side of the backing and a second tuft-anchoring layer on the opposed side of the backing, said first and second layers being interconnected through said backing by fibres of said fibrous material, a plurality of pile tufts inserted through the primary backing and said first and second layers, said tufts extending through the backing and projecting on the same side of the backing as said first layer in order to form the pile, and at least said tuft-anchoring layer being melted in order to secure the tufts in the backing and provide an anchor coat for the fabric.

9. A process of producing a tufted pile fabric comprising the steps of providing a primary backing, needling a meltable fibrous material through said backing so as to provide a first surface-covering layer on one side of the backing and a second tuft-anchoring layer on the opposed side of said backing, said first and second layers being interconnected through said backing by fibres of said fibrous material, inserting a plurality of pile tufts through the primary backing and said first and second layers so that said tufts extend through the backing and project on the same side of the backing as said first layer in order to form the pile, and melting at least said second tuft-anchoring layer to secure the tufts in the backing and provide an anchor coat for the fabric.

4,439,477

FIBER MAT FOR PRODUCING A THREE DIMENSIONAL MOLDED MOLDING BY THE DRY PROCESS

Günter H. Kiss, Berlin, Fed. Rep. of Germany, assignor to Lignotock Verfahrenstechnik GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 202,316, Oct. 30, 1980, abandoned. This application Dec. 20, 1982, Ser. No. 450,924
Int. Cl.³ B32B *3/06*
U.S. Cl. 428—102 **18 Claims**

1. A fiber mat for producing three-dimensional molded moldings by means of the dry process comprising:

a fibrous central layer;

a pair of supporting layers joined to opposed sides of the central layer, the supporting layers being formed of creped foil material; and wherein

the form and depth of creping of the supporting layers and the overlapping length of the fibers in the central layer are adjusted with respect to each other such that the local elongation of the creping does not interrupt the central layer.

4,439,478

HEAT SEALABLE, MULTI-PLY POLYPROPYLENE FILM

Daniel F. Ferguson, Spartanburg; Frederick D. Stringer, Greenville, and Michael D. Esakov, Greer, all of S.C., assignors to W. R. Grace & Co., Cryovac Division

Continuation of Ser. No. 152,970, May 23, 1980, abandoned. This application Apr. 15, 1982, Ser. No. 368,598
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—137 **6 Claims**

1. A heat-sealable, multi-layer film for packaging comprising:

(a) a base layer comprising propylene homopolymer; and,

(b) a skin layer affixed to one surface of said base layer comprising a blend of 60% to 80% by weight of film grade, thermoplastic propylene-ethylene copolymer with 40% to 20% by weight of propylene homopolymer, the ratio of thickness of the base layer to skin layer being at least 4:1.

4,439,479

SLIPPERY BIAXIALLY STRETCHED POLYESTER FILMS

Tamaki Kanai, Sagamihara; Hirofumi Yoshikawa, Hachioji; Takashi Yamagishi, Yokohama; Kenji Suzuki, and Yoshikatsu Ohta, both of Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jan. 11, 1982, Ser. No. 338,652
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—148 **6 Claims**

1. A slippery biaxially stretched polyester film having a substantially continuous coating with numerous protrusions substantially having form retention, said coating being formed substantially all over on at least one surface of the film and at least comprising a film-forming polymeric compound and a metal salt having the composition of formula (I)

$$Me_p(CH_2{=}\underset{\displaystyle R}{\underset{|}{C}}COO)_y(O)_z(X)_w \quad (I)$$

wherein Me represents a metal ion having a valence of 2 to 6, R is a hydrogen atom or a methyl group, X is one equivalent of an anion, y is a number of from 1 to 6, z is a number of from 0 to 2, w is a number of from 0 to 8, and p is a number equal to the quotient obtained by dividing the total of $y+2z+w$ by the atomic valence of Me, provided that when y is a number of 2 or more, two or more R groups may be identical or different, when w is a number of 2 or more, two or more X ions may be identical or different, and the group

$$CH_2{=}\underset{\displaystyle CH_3}{\underset{|}{C}}COO$$

in the case of R=methyl is contained in a number of not more than 2 for each Me, and said coating consisting of a substantially continuous base coating layer in contact with the surface of the polyester base film and numerous minute protrusions integral with the base coating layer and extending outwardly therefrom.

4,439,480

RADIATION CURED COATING AND PROCESS THEREFOR

Peter R. Sachs, New Windsor, and James W. Sears, Newburgh, both of N.Y., assignors to Tarkett AB, Ronneby, Sweden

Continuation of Ser. No. 192,587, Oct. 1, 1980, Pat. No. 4,326,001. This application Apr. 19, 1982, Ser. No. 369,752

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—161 **22 Claims**

1. Method of forming a pigmented, radiation cured coating on a substrate comprising:

(a) applying to the substrate a pigmented first layer between about 0.01 and about 0.1 mm thick of radiation curable material and subjecting such layer to ionizing irradiation or ultraviolet light in an atmosphere containing at least about 5,000 ppm oxygen until the radiation curable material is cured except for its surface; and

(b) then applying to selected areas of the surface of the thus partially cured first layer an unpigmented second layer of the same or a different radiation curable material and subjecting the second layer to ionizing irradiation or ultraviolet light in an inert atmosphere containing less than about 1,000 ppm oxygen to thereby completely cure said second layer and complete the cure of the first layer.

4,439,481

RESOLE TREATED PAPERMAKERS FELT AND METHOD OF FABRICATION

Cary P. Johnson, Clifton Park, and Jerry G. Sokaris, Troy, both of N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,080

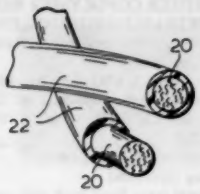
Int. Cl.³ B32B *5/02*

U.S. Cl. 428—235 **6 Claims**

1. An intermediate wet-press felt fabric, which comprises;

a first layer of interwoven machine direction and cross-machine direction yarns; and

a second layer of non-woven staple fibers, needled to the first layer;



said yarns and fibers having a coating of a synthetic, cross-linkable, polymeric resin.

4,439,482

PRESSURE-SENSITIVE ADHESIVE TAPE

Masakazu Suematsu, Ibaraki, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Nov. 12, 1981, Ser. No. 320,847

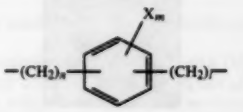
Claims priority, application Japan, Nov. 17, 1980, 55-163345[U]

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—252 **9 Claims**

1. A pressure-sensitive adhesive tape having an ultimate elongation in the lengthwise direction of 10–15% comprising:

(A) a base woven fabric which comprises as the warp a flat yarn of polyester fibers containing a residue of the following formula in the molecular chain:



in which X is $-SO_3Na$, $-X'$, $-OR$, $-R'$ or $-OAr$, X' is halogen, R and R' are independently alkyl, Ar is an aromatic radical which may optionally be substituted, m is 1 to 3, n and l are independently 0 to 2, and the bonding positions of the $(CH_2)_n$— and $-(CH_2)_l$— may be ortho-, meta- or para-positions;

(B) a resin layer laminated to at least one side of said base fabric without an intermediate adhesive layer to form a laminate;

(C) a releasing agent on one surface of said laminate; and

(D) an adhesive on the other surface of said laminate;

wherein said yarn has a tensile strength of greater than about 2 g/d and an elongation of greater than about 20% and having a strength in the weft direction of at least 15 Kg/25 mm width also having a tearing strength of no more than 400 g.

4,439,483

SPRAY-SUPPRESSION DEVICE

Earle R. Ellis, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 365,342, Apr. 5, 1982, Pat. No. 4,391,870. This application May 9, 1983, Ser. No. 492,528

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—287 **9 Claims**

1. A laminated spray-suppression device comprising a non-woven fabric core layer encapsulated on each side with an adhesive layer, a polymeric backing layer fusion-bonded to one of the adhesive layers and a polymeric grass-like, three-dimensional layer fusion-bonded to the other adhesive layer.

4,439,484

MULTI-LAYER BEARING WITH COATING OF TETRAFLUOROETHYLENE-PERFLUOROALKYLVINYL EITHER COPOLYMER RESIN AND POLYTETRAFLUOROETHYLENE RESIN

Sanae Mori, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed Aug. 3, 1982, Ser. No. 404,673
Claims priority, application Japan, Aug. 12, 1981, 56-126125
Int. Cl.³ B32B *15/00, 27/00*
U.S. Cl. 428—318.4 2 Claims

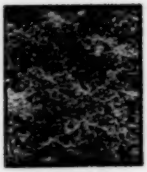
1. A multi-layer bearing comprising:
a metal backing layer; and
a porous material layer lined with said metal backing layer, said porous material layer being impregnated in its interior, and coated on its surface with a composition containing, by volume, 0.1–50% tetrafluoroethylene-perfluoroalkylvinyl ether copolymer resin and the balance essentially polytetrafluoroethylene.

4,439,485

ELECTRIC DISCHARGE RECORDING MATERIALS

Shuji Takemura, Chiba; Yoshihiko Kawano, and Kazumi Hirakawa, both of Tokyo, all of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1981, Ser. No. 316,051
Claims priority, application Japan, Oct. 31, 1980, 55-153463
Int. Cl.³ B05D *5/12;* B32B *5/16;* B41M *5/24*
U.S. Cl. 428—323 8 Claims



1. A discharge recording material which comprises a support, a colored layer on the support, and a metal layer deposited on the colored layer, the colored layer comprising carbonblack aggregates and a binder as main components, the carbonblack aggregates having a mean size within a range of from 0.5 to 5.0μ and being an aggregate of carbonblack particles coated with a plasticizer.

4,439,486

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Masaaki Fujiyama, and Nobuo Tsuji, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 12, 1982, Ser. No. 357,448
Claims priority, application Japan, Mar. 12, 1981, 56-35891
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—332 14 Claims

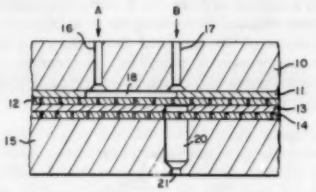
1. A magnetic recording medium, comprising:
a nonmagnetic support base; and
a magnetic layer formed on a surface of the base, the magnetic layer consisting essentially of:
ferromagnetic particles having a specific surface area of 30 m^2/g or more; and
a binder consisting essentially of a nitrocellulose having an average degree of polymerization of about 50 to 300 and a degree of nitration of 10.7 to 13.0, a polymer selected from the group consisting of a thermoplastic polyurethane resin and a polyurethane prepolymer, and a polyisocyanate compound.

4,439,487

POLYESTER/NYLON BICOMPONENT FLAMENT

Uel D. Jennings, Signal Mountain, Tenn., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 17, 1982, Ser. No. 450,778
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—397 6 Claims



1. A bicomponent filament having a dumbbell cross-sectional shape, consisting of between 35 and 65% by volume antimony-free polyethylene terephthalate modified with 0.5 to 3 mole percent 5-(sodium sulfo) isophthalate units, and a complementary amount of polyhexamethylene adipamide, the exterior surface of said bicomponent filament being at least 75% but not more than 95% of one of the polymeric components, the interfacial junction between the two polymeric components being at least in part jagged, said bicomponent filament being readily crimpable and dyeable, and having a high resistance to longitudinal splitting.

4,439,488

ENCAPSULATION BY ENTRAPMENT WITHIN POLYHYDROXY POLYMER BORATES

Donald Trimnell, and Baruch S. Shasha, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 26, 1982, Ser. No. 352,662
Int. Cl.³ B01J *13/02;* B32B *23/12, 27/04*
U.S. Cl. 428—402.24 15 Claims

1. A method of encapsulating a chemical biological agent comprising the steps of:
a. preparing a solution or dispersion of a suitable chemical biological agent in a matrix-forming material comprising an aqueous paste of a gel-forming polyhydroxy polymer (PHP), wherein said paste has a solids concentration of said PHP of from about 10–40%, and wherein the relative amount of said PHP with respect to said biological agent is sufficient to entrap said agent within a matrix of said PHP;
b. reacting from a single phase at an alkaline pH said PHP with boric acid or a boric acid derivative to form a continuous insolubilized matrix gel having entrapped therein uniformly dispersed, discontinuous domains of said agent; and
c. recovering free-flowing particles of said entrapped chemical biological agent.

11. A composition of matter produced by the process of claim 1.

4,439,489

PARTICLES COVERED WITH A CURED INFUSIBLE THERMOSET FILM AND PROCESS FOR THEIR PRODUCTION

Calvin K. Johnson, Lockport, and David R. Armbruster, Forest Park, both of Ill., assignors to Acme Resin Corporation, Forest Park, Ill.

Filed Feb. 16, 1982, Ser. No. 349,222
Int. Cl.³ B32B *27/42*
U.S. Cl. 428—404 22 Claims

1. A process for the preparation of particulate matter coated

with a cured phenolic resin wherein the improvement comprises mixing an uncured resin with particulate matter resistant to melting or decomposition at temperatures below about 450° F., preheated to a temperature of from about 300° F. to about 450° F., adding with continued mixing from about 0.03% to about 0.5% by weight, based on the weight of the particulate matter, of a lubricant to the mix of resin and particulate matter and maintaining the resultant mixture above about 300° F. for a sufficient time to cure the resin, whereby there is obtained a product containing individually coated particles having high abrasion resistance and improved crush resistance suitable for use as a propping agent in subterranean formations.

12. Coated particulate matter consisting essentially of particles individually coated with a cured phenolic resin prepared by mixing an uncured resin with particulate matter resistant to melting or decomposition at temperatures below about 450° F., preheated to a temperature of from about 300° F. to about 450° F., adding with continued mixing from about 0.03% to about 0.5% by weight, based on the weight of the particulate matter, of a lubricant to the mix of resin and particulate matter and maintaining the resultant mixture above about 300° F. for a sufficient time to cure the resin.

13. The coated particulate matter of claim 12 wherein the particulate matter is sand.

4,439,490

EXPANDABLE POLYMERIC STYRENE PARTICLES

Richard A. Schwarz, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 483,406, Apr. 8, 1983, Pat. No. 4,429,058. This application Oct. 24, 1983, Ser. No. 544,919

Int. Cl.³ C08J 9/22

U.S. Cl. 428—407 3 Claims

1. An expandable polymeric styrene particle having incorporated therein a blowing agent, 0.025% to about 1.0% by weight of pentaerythritol tetrastearate and an overcoat of 0.04% to about 0.4% of finely divided glyceryl monostearate.

4,439,491

OXIDATION RETARDANT FOR GRAPHITE

William F. Wilson, Elizabethton, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.

Filed Nov. 18, 1982, Ser. No. 442,651

Int. Cl.³ B32B 9/00; C09K 15/32

U.S. Cl. 428—408 4 Claims

1. An oxidation retardant solution for carbon and graphite comprising a solution of monobasic ammonium phosphate, zinc orthophosphate, phosphoric acid, boric acid and cupric oxide.

3. A graphite electrode treated with the solution of claim 1.

4,439,492

INJECTION MOLDED ARTICLES WITH IMPROVED SURFACE CHARACTERISTICS

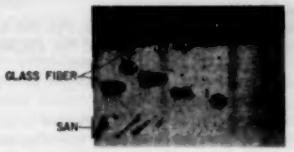
Akihiro Wada, Inagi; Kichiya Tazaki, Yokohama; Tamotsu Tahara, Omiya; Hiroshi Suzuki, Tokyo, and Yukihisa Mizutani, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 177,184, Aug. 11, 1980, Pat. No. 4,340,551. This application Mar. 29, 1982, Ser. No. 363,025

Int. Cl.³ B32B 9/00, 9/04

U.S. Cl. 428—409 6 Claims

1. Injection molded articles of thermoplastic resin compositions containing at least one of reinforcing materials and fillers in an amount at least 4% by weight, and comprising a smooth skin layer constituted substantially of only the resin component over the outer surface of the molded article, said layer bestowing on the molded article a mirror surface having surface gloss (ASTM D 523; 60°) well maintained within a decrement of



reflectivity of 10% or less, based on the ideal perfect mirror reflection of the intrinsic resin employed.

4,439,493

MULTILAYER HEAT SEALABLE ORIENTED PACKAGING FILM AND METHOD OF FORMING SAME

Carl C. Hein, Pittsford; John R. Wagner, Jr., Rochester, and Mark S. Powell, Egypt, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 4, 1983, Ser. No. 463,744

Int. Cl.³ B32B 27/08, 27/30, 27/32; B65D 65/40

U.S. Cl. 428—414 12 Claims

1. A heat sealable multilayer structure comprising:

(I) a substrate comprising a polyolefin film;

(II) a layer on at least one surface of (I), said layer consisting essentially of a random copolymer of ethylene and propylene containing from about 0.5 to about 6% by weight of ethylene;

(III) a primer coating on at least one surface of said layer (II); and

(IV) a heat sealable layer on said coating (III), said heat sealable layer comprising an interpolymer of (a) a minor amount by weight of acrylic acid, methacrylic acid or mixtures thereof and (b) a major amount of neutral monomer esters comprising (1) methyl acrylate or ethyl acrylate and (2) methyl methacrylate.

4,439,494

SILYL-POLYACRYLATES FOR POLYCARBONATE SUBSTRATES

Daniel R. Olson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,685

Int. Cl.³ B32B 9/04; B05D 3/02

U.S. Cl. 428—412 14 Claims

10. A method of improving the abrasion resistance of a thermoplastic substrate which comprises

(1) treating the surface of the thermoplastic substrate with a heat curable hardcoat composition and

(2) heating the treated substrate to a temperature in the range of from 85° C. to 140° C., where the heat curable hardcoat composition comprises by weight,

(A) 20 to 80% of colloidal silica,

(B) 80 to 20% of a silyl-containing acrylate selected from the class consisting of

(i) an alkylacrylate-acryloxyalkyl polyalkoxysilane copolymer or

(ii) a mixture of alkylacrylateacrylic acid copolymer and a glycidoxyalkylpolyalkoxysilane

(C) 1% to 20% of a UV absorber, based on the weight of (A), (B), and (C).

14. A polycarbonate substrate treated in accordance with claim 10.

4,439,495

ACRYLIC MODIFIED ANIONIC WATER DISPERSIBLE STYRENE (METH)ACRYLONITRILE COPOLYMERS

Michael A. Tobias, Bridgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 275,000, Jun. 18, 1981, Pat. No. 4,360,642. This application Sep. 29, 1982, Ser. No. 426,404
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—463 8 Claims

1. A coating composition comprising:

(A) a graft copolymer of an acrylic monomer or monomers or of acrylic monomer or monomers and other monomers copolymerizable therewith and a random copolymer of a styrene and between about 20 weight percent and about 30 weight percent of the random copolymer of (meth)acrylonitrile, in which at leasi about 8 percent of the total weight of said graft copolymer is derived from acrylic acid, methacrylic acid, or both, said graft copolymer being neutralized with ammonia, ammonium hydroxide, or a tertiary amine; and

(B) a cross-linking agent;

said composition being diluted with water to a solids content of between about 10 weight percent and about 40 weight percent.

4,439,496

WATER-PROOF PHOTOGRAPHIC SUPPORT

Shigehisa Tamagawa; Tetsuro Fuchizawa, both of Fujinomiya, and Minoru Ono, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1982, Ser. No. 372,818
Claims priority, application Japan, May 29, 1981, 56-82162
Int. Cl.³ B32B *23/08, 27/08;* D21H *3/44*
U.S. Cl. 428—513 10 Claims

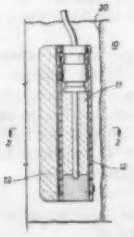
1. A water-proof photographic support comprising a paper sheet coated with a polyolefin on both surfaces thereof, in which the paper sheet is sized with a combination of an alkylketene dimer, a cationic polyacrylamide and an anionic polyacrylamide, the alkylketene dimer being present in an amount of 0.2 to 3.0% by weight and the total amount of cationic polyacrylamide and anionic polyacrylamide being 0.5 to 4.0% by weight, all percent by weight being based on the weight of the absolutely dried pulp constituting the paper sheet.

4,439,497

ULTRASONIC SOUND ABSORBER

Rocco DiFoggio, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 27, 1982, Ser. No. 382,535
Int. Cl.³ F16F *7/00, 13/00*
U.S. Cl. 428—539.5 5 Claims



1. A compact ultrasonic sound adsorbing material for use with the transducer of an acoustical logging system comprising:

a sound adsorber, said adsorber being formed of sintered porous metal powder shaped to surround a portion of the transducer to adsorb acoustic waves arriving from predetermined directions, the surface of said adsorber facing said predetermined direction being retained in the as molded condition and free of any covering; and

a viscous liquid, said liquid filling the pore space of the sound adsorber.

4,439,498

CORROSION RESISTANT STAINLESS STEEL COVERED ELECTRODE

Edward P. Sadowski, Ringwood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 717,093, Aug. 24, 1976. This application Aug. 21, 1978, Ser. No. 935,349
Int. Cl.³ B22F *7/04*
U.S. Cl. 428—558 1 Claim

1. A stainless steel welding electrode exhibiting corrosion resistant characteristics in chloride containing environments, the electrode comprising a core wire and a flux coating, the core wire including up to about 0.06% carbon, about 0.5% silicon, from about 23% to about 27% nickel, from about 19% to about 22% chromium, from about 5.5% to about 8% molybdenum, from about 0.2% to about 2% manganese, up to about 0.2% aluminum, up to about 0.1% titanium, from about 0.005% to about 0.1% of an element selected from the group consisting of calcium and magnesium, and the balance essentially iron; and the flux coating containing, in parts by weight, about 23 parts to about 27 parts calcium carbonate, from about 16 parts to about 20 parts of titania, from about 14 parts to about 20 parts of a compound selected from the group consisting of manganese dioxide and manganese carbonate, from about 16 parts to about 20 parts of cryolite, from about 16 parts to about 20 parts of columbium, and from about 2 parts to about 4 parts of a material selected from the group consisting of bentonite and mica.

4,439,499

STRATIFIED CORROSION-RESISTANT COMPLEX

Michel E. Royer, La Balme de Sillingy, France, assignor to S. T. Dupont, Paris, France

Continuation of Ser. No. 236,376, Feb. 20, 1980. This application Feb. 23, 1983, Ser. No. 469,057
Claims priority, application France, Feb. 20, 1980, 80 03699
Int. Cl.³ C22C *19/05;* B32B *15/04*
U.S. Cl. 428—670 6 Claims

1. A corrosion-resistant metal laminate, comprising:

a metal alloy substrate comprising, by weight, at least 45% nickel, at least 7% chromium, at least 7% molybdenum, and balance composition of up to 15%; and

an exterior layer formed on said substrate, said exterior layer being chosen from the group consisting of the noble metals and Chinese lacquer.

4,439,500

GAS SWITCH

Henry F. Gibbard, Schaumburg; Richard C. Murray, Palatine, and Jay M. Cech, Elmhurst, all of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 27, 1982, Ser. No. 402,382
Int. Cl.³ H01M *12/06*
U.S. Cl. 429—27 10 Claims

1. An air cell battery comprising:

an anode casing containing anode material and a cathode casing containing cathode material, said cathode casing having an opening;

an insulator located between and attached to said anode

casing, and said cathode casing and a separator positioned between said anode material and said cathode material;

a bidirectional gas switch comprising;

a single membrane covering said opening in said cathode casing, said membrane having at least first and second sides and having at least one formed passageway having a predetermined geometry, said membrane and said cathode and anode casings thereby defining an inner region within said air cell battery and an outer region external to the air cell battery;

a liquid having a low vapor pressure contained at least within said passageway of said membrane when a pressure difference across said membrane between said inner and outer regions is less than a first predetermined value, thereby preventing an exchange of gas between said inner region and said outer region, said liquid flowing substantially out of said passageway and onto a side of said membrane adjacent said gas containing region having a lower pressure value when the air cell battery supplies electrical current and oxygen is extracted from said inner region to cause said pressure difference across said membrane to exceed a second predetermined value thereby opening said passageway and allowing oxygen from said outer region to move into said inner region,

and wherein, when the air cell battery ceases to supply electrical current, said pressure difference becomes less than said first predetermined value and said liquid flows back into said passageway thereby closing said passageway.

4,439,501

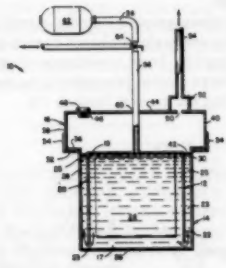
CHARGE-RETENTION STORAGE BATTERY

Hugh L. Flanagan, 22 Randolph St., Canton, Mass. 02021

Filed Sep. 8, 1982, Ser. No. 416,081

Int. Cl.³ H01M 2/38, 6/38

U.S. Cl. 429—70 **6 Claims**



1. Electric storage battery capable of retaining a charge even during prolonged periods of non-use comprising:

(a) an inner casing defined by a planar, horizontally disposed top surface, first and second parallel vertically disposed end walls and parallel first and second vertically disposed side walls whereby to provide a sealed compartment open at the bottom; a multiplicity of battery cells being provided within said inner casing for the containment of electrolyte, each said battery cell being provided with spaced apart positive and negative electrodes, and a test and fill port being provided in said top surface for each said battery cell;

(b) an outer casing of generally cubic shape larger in dimension than said inner casing defined by a planar, horizontally disposed bottom parallel to said horizontally disposed top surface and vertically disposed side and end walls open at its top, said inner casing being located and supported within said outer casing and spaced apart from said bottom and side and end walls of said outer casing in such a manner that a passageway is provided on each side of said inner casing for the flow of electrolyte to and from the battery cells inside of said inner casing through the said open bottom of the inner casing and between the vertical end and side walls of the said inner and outer casings;

(c) a reservoir for electrolyte defined by a horizontally disposed top surface and vertically disposed sides and ends extending downwardly therefrom, open at its bottom, and connected to said outer casing and disposed with respect thereto at a location above the outer casing into which electrolyte is transferred from said inner casing under pressure of inert gas during periods of non-use of the battery;

(d) a cubic-shaped pressure chamber defined by a horizontally disposed top surface and connected to said horizontally disposed top surface of said reservoir, and a multiplicity of test and fill ports in said top surface of said pressure chamber corresponding in number to those provided in the inner casing top surface;

(e) a first conduit means connected to said pressure chamber for connection to an inert gas source and for introduction of inert gas into the said pressure chamber;

(f) a second conduit means comprising a plurality of tubes each interconnected with said top surface of said pressure chamber and said top surface of said inner casing extending through said reservoir and pressure chamber and terminating in the said test and fill ports; and an opening being provided in each said tube in that portion located within the said pressure chamber whereby inert gas introduced into said pressure chamber can be provided at equal pressure and sufficient pressure to each said battery cell within said inner casing to case said electrolyte to flow out of said inner casing into said reservoir while simultaneously blanketing the exposed electrodes and protecting them against oxidation, and electrolyte can be added to the said battery cells as and when desired; and

(g) means connected to the said reservoir for venting the reservoir to the atmosphere whereby once the inert gas pressure is released the electrolyte will flow back from the reservoir under gravity into the battery cells in the said inner casing.

4,439,502

GALVANIC ELEMENT HAVING A POROUS SOLID-ELECTROLYTE SINTER FRAMEWORK CONTAINING THE CATHODE MATERIAL

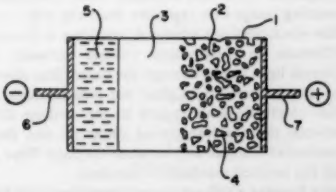
Rainer Bittihn, and Eren Yalcin, both of Kelkheim, Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,408

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1981, 3129679

Int. Cl.³ H01M 4/36

U.S. Cl. 429—104 **11 Claims**



1. A galvanic element with solid electrolyte, a negative alkali metal electrode and positive electrode, wherein

the solid electrolyte forms a self-supporting porous sinter framework in at least one electrode.

4,439,503

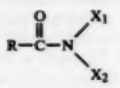
METAL-ORGANIC LIQUID DEPOLARIZER ELECTROCHEMICAL CELL

Narayan Doddapaneni, Glenside, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1983, Ser. No. 506,463
Int. Cl.³ H01M 6/14
U.S. Cl. 429—108 8 Claims

1. In a non-aqueous electrochemical cell system having an active metal anode, a cathode and a non-aqueous electrolyte, the improvement comprising

an organic cathode depolarizer represented by the formula



where R is a group selected from those consisting of alkyl, alkoxy, phenyl or phenoxy groups and

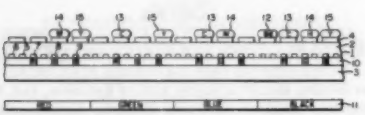
where X_1 and X_2 are halogens.

4,439,504

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND COLOR ELECTROPHOTOGRAPHIC PROCESS

Shunichi Ishihara, Kodaira; Nobuo Kitajima, Toride; Yuji Nishigaki, Tokyo, and Nobuko Kitahara, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 302,235
Claims priority, application Japan, Sep. 18, 1980, 55-130236
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.³ G03G 13/01, 5/14
U.S. Cl. 430—42 6 Claims



1. A color electrophotographic process which comprises:

applying voltage between a non-transparent electrode and a color filter electrode of an electrophotographic photosensitive member comprising isolated conductive members forming picture elements, a photoconductive layer, non-transparent electrodes and color filter electrodes;

conducting imagewise exposure from the side where color filter electrodes are arranged, resulting in formation of a difference in distribution voltage between the area wherein light passes through the color filter electrode and the area wherein light does not pass through the color filter electrode with regard to the voltage distribution between the non-transparent electrode and the isolated conductive member and between the color filter electrode and the isolated conductive member;

thereby forming a voltage image depending upon the change of the voltage of the isolated conductive member caused corresponding to a difference in distribution voltage; and

developing said voltage image with a color toner corresponding to a color light passing through the color filter electrode.

4,439,505

ELECTRICAL CONDUCTIVE COMPOSITIONS

Jerome H. Perlstein, Rochester, and Neil F. Haley, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 21, 1982, Ser. No. 341,418
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 8 Claims

1. An electrically conducting composition comprising an electrically insulating polymer and a charge transfer complex characterized in that the charge transfer complex (a) is in the form of dendrite crystals throughout the polymer and (b) is a salt consisting of a cation of 2-(4,5-dihydronaphtho[1,2-d]-1,3-dithiol-2-ylidene)-4,5-dihydronaphtho[1,2-d]-1,3-dithiole and an anion selected from the group consisting of 7,7,8,8⁻ tetracyanoquinodimethane, ClO_4^-, BF_4^-, PF_6^-, F^-, Cl^-, I^-, and I_3^-.

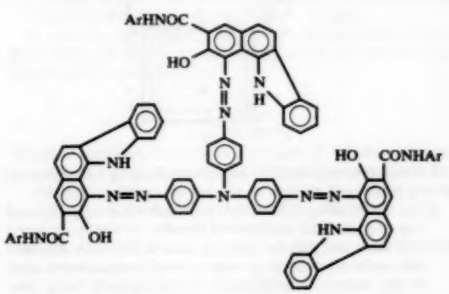
4,439,506

MULTILAYER ELECTROPHOTOGRAPHIC ELEMENT CONTAINING A TRISAZO CHARGE CARRIER GENERATING SUBSTANCE AND AN ANTHRACENE OR DIVINYL BENZENE CHARGE CARRIER TRANSFER SUBSTANCE

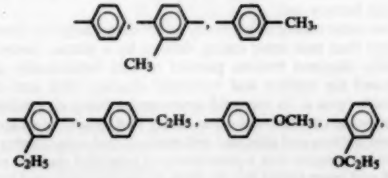
Masafumi Ohta, and Masaomi Sasaki, both of Susono, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,849
Claims priority, application Japan, May 28, 1981, 56-80157; May 28, 1981, 56-80159; May 28, 1981, 56-80167; May 28, 1981, 56-80169; May 29, 1981, 56-82239; May 29, 1981, 56-82241; Jun. 10, 1981, 56-88107; Jun. 10, 1981, 56-88109; Jun. 10, 1981, 56-88114; Jun. 12, 1981, 56-90615; Jun. 12, 1981, 56-90616; Jan. 18, 1982, 57-5687; Jan. 18, 1982, 57-5689
Int. Cl.³ G03G 5/06
U.S. Cl. 430—58 14 Claims

1. An electrophotographic element comprising an electrically conductive substrate, a charge carrier generating layer and a charge transfer layer superimposed on said substrate, wherein said charge carrier generating layer contains a triasazo compound having the general formula (I):



wherein, Ar represents



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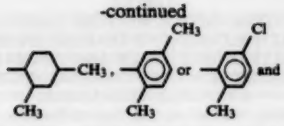
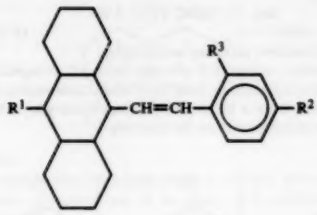


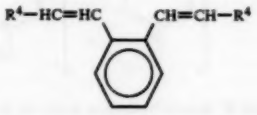
said charge transfer layer contains a charge transfer substance having the general formula (II) or (III):

(II)



wherein, R^1 represents a hydrogen or halogen atom, R^2 represents hydrogen, an alkyl group having 1–4 carbon atoms, an alkoxy group having 1–4 carbon atoms, a dialkylamino group, or a substituted or non-substituted diaralkylamino group, and R^3 represents hydrogen, an alkyl group or a halogen atom

(III)



wherein, R^4 represents a carbazolyl group, a pyridyl group, a thienyl group, an indolyl group, a furyl group or a substituted or non-substituted phenyl, styryl, naphthyl or anthryl group, said substituent being one selected from the group consisting of dialkylamino, alkyl, alkoxy, halogen atom, aralkylamino, N-alkyl-N-aralkylamino, and amino groups
and a binder.

4,439,507

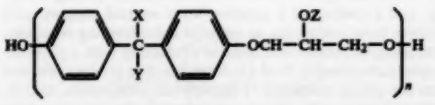
LAYERED PHOTORESPONSIVE IMAGING DEVICE WITH PHOTOGENERATING PIGMENTS DISPERSED IN A POLYHYDROXY ETHER COMPOSITION

Frank Y. Pan, Rochester; Ian D. Morrison, and Leon A. Teuscher, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 21, 1982, Ser. No. 420,961
Int. Cl.³ G03G 5/00, 5/04
U.S. Cl. 430 **26 Claims**

1. An improved layered photoresponsive imaging device comprised in the order stated of (1) an optional supporting substrate, (2) a conductive layer, (3) a photogenerating layer comprised of an inorganic photoconductive composition, or an organic photoconductive composition, dispersed in a resinous binder material comprised of a poly(hydroxyether) material selected from the group consisting of those of the following formulas:

I.



and

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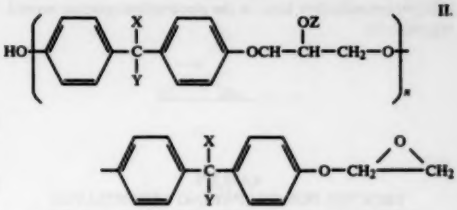
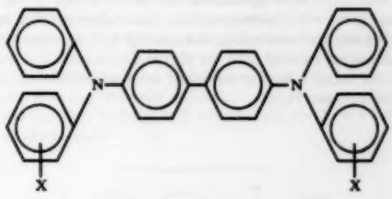
II.



wherein X and Y are independently selected from the group consisting of aliphatic groups and aromatic groups, Z is hydrogen, an aliphatic group, or an aromatic group, and n is a number of from about 50 to about 200, and (4) in contact with the photogenerating layer a charge transport layer comprised of an electrically active composition dispersed in an insulating organic resinous binder, which composition is of the following formula:



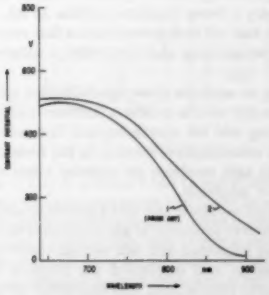
wherein X is selected from the group consisting of ortho (CH_3), meta (CH_3), para (CH_3), ortho (CL), meta (CL) and para (CL).

4,439,508

ELECTROPHOTOGRAPHIC RECORDING MATERIAL COMPRISES ARSENIC, SELENIUM AND TELLURIUM

Manfred Lutz, and Bernd Reimer, both of Warstein, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,943
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020940
Int. Cl.³ G03G 5/08
U.S. Cl. 430—84 **5 Claims**



1. In an electrophotographic recording material comprising a photoconductor made of a selenium compound applied as a layer on an electrically conductive substrate, the improvement wherein the photoconductor comprises a compound of ar-

senic, selenium and tellurium of the formula $As_2Se_{3-x}Te_x$, where $0.05<x<0.5$, and said layer of said compound is the sole photoconductive layer in the electrophotographic recording material.

4,439,509

PROCESS FOR PREPARING OVERCOATED ELECTROPHOTOGRAPHIC IMAGING MEMBERS

Richard L. Schank, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,870
Int. Cl.³ G03G 5/04
U.S. Cl. 430—132 11 Claims

1. A process for forming an overcoated electrophotographic imaging member comprising the steps of providing an electrophotographic imaging member, applying a coating in liquid form of a cross-linkable siloxanol-colloidal silica hybrid material having at least one silicon bonded hydroxyl group per every three —SiO— units on said electrophotographic imaging member, and contacting said coating with an ammonia gas condensation catalyst until the siloxanol-colloidal silica hybrid material forms a hard cross-linked solid organosiloxane-silica hybrid polymer layer.

4,439,510

METHOD FOR THE PRODUCTION OF DRY TONER FOR ELECTROSTATOGRAPHY USING INTERFACIAL POLYCONDENSATION TECHNIQUES

Arthur R. McLoughlin, Adelaide, Australia, assignor to Research Holdings Pty Limited, Eastwood, Australia

PCT No. PCT/AU81/00179, § 371 Date Aug. 10, 1982, § 102(e) Date Aug. 10, 1982, PCT Pub. No. WO82/02005, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 3, 1981, Ser. No. 414,321
Claims priority, application Australia, Dec. 11, 1980, PE6894
Int. Cl.³ G03G 9/16
U.S. Cl. 430—137 9 Claims

1. A method for the preparation of electroscopic marking particles comprising the steps of

blending coloring matter, pressure fixable material and if necessary solvent therefore to form an ink,

adding to said ink in dissolved form a first reactive substance and homogenising said first reactive substance with said ink,

preparing an aqueous phase emulsification solution containing a water soluble emulsion stabiliser and a pH stabiliser,

emulsifying said ink containing said first reactive substance in said emulsification solution in the form of droplets,

adding to said emulsion an aqueous solution of a second reactive substance,

stirring said emulsion and said aqueous solution of said second reactive substance to allow reaction between said first reactive substance and said second reactive substance to encapsulate said emulsified ink droplets by forming a polymeric shell around said emulsified ink droplets, and

spray drying the so formed capsule slurry to produce dry electroscopic marking particles,

characterised by said emulsion stabiliser comprising albumin and said albumin being rendered water insoluble before or during said spray drying step.

4,439,511

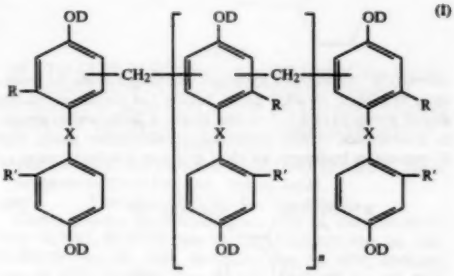
LIGHT-SENSITIVE MIXTURE BASED ON O-NAPHTHOQUINONE DIAZIDE ESTER OF CONDENSATE OF BISPHENOL AND FORMALDEHYDE AND LIGHT-SENSITIVE COPYING MATERIAL PREPARED THEREFROM

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 30, 1982, Ser. No. 393,788
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1981, 3127754
Int. Cl.³ G03C 1/54, 1/60
U.S. Cl. 430—165 14 Claims

1. A light-sensitive mixture, comprising:

a light-sensitive compound selected from a 1,2-naphthoquinone-2-diazide-sulfonic acid ester of a condensation product formed from a bisphenol and formaldehyde, wherein the ester corresponds to the formula I



in which R and R' denote hydrogen atoms or lower alkyl groups, X denotes a saturated alkylene, hydroxyalkylene or dihydroxyalkylene group having 6 to 18 carbon atoms, D denotes the 1,2-naphthoquinone-2-diazide-5-sulfonyl radical or the 1,2-naphthoquinone-2-diazide-4-sulfonyl radical and n denotes a number from 1 to 20; and

a binder which is insoluble in water, but is soluble or at least swellable in aqueous alkaline solutions, wherein said ester and said binder are present in amounts sufficient to promote, upon exposure to light, a differentiation of solubility between exposed and unexposed portions of said mixture in dilute aqueous-alkaline solutions.

4,439,512

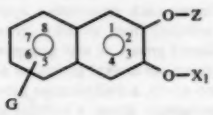
CHROMOGENIC COMPOSITIONS CONTAINING STABILIZED PHENOLIC COUPLER COMPOUNDS, RECORDING MATERIALS AND PROCESSES UTILIZING SAME

Claude Ceintrey, Paris, France, assignor to La Cellophane, Paris, France

Division of Ser. No. 215,067, Dec. 10, 1980, abandoned, which is a continuation of Ser. No. 911,718, Jun. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 905,360, May 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 747,976, Dec. 6, 1976, abandoned. This application Nov. 18, 1982, Ser. No. 442,782
Claims priority, application France, Dec. 5, 1975, 75 37228
Int. Cl.³ G03C 1/52
U.S. Cl. 430—180 23 Claims

1. A recording or reproduction material comprising a support and a coating of a sensitive layer on said support, said sensitive layer containing, as essential color forming reactants, a chromogenic compound capable of reacting with a phenolic coupler compound to form a colored reaction product selected from the group consisting of spiropyram compounds, triarylmethane compounds, chromogenic ferric salts, non-photosensitive chromogenic silver salts and diazonium compounds, and

a hydroxyl group-blocked phenolic coupler compound which is the reaction product of a phenolic coupler compound and a hydroxyl group reactive compound capable of replacing the hydrogen atom of each phenolic hydroxyl group of the phenolic coupler compound, the stabilized phenolic compound being non-reactive to the chromogenic compound and being capable of producing the phenolic coupler compound by decomposition in situ wherein the stablized phenolic coupler compound is a derivative of 2,3-dihydroxynaphthalene of the formula



wherein

G represents a hydrogen atom, a sulfonic group or a sulfonate of ammonium or an amine and represented by the formula:

$-SO_3^-, EH^+]$

in which E represents ammonia or a primary, secondary or tertiary aromatic or aliphatic amine; Z represents a radical of the following formula (IIa), (IIb), or (IIc)

(IIa)

(IIb)

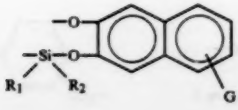
or

C_nH_{2n+1} (IIc)

wherein n is an integer of from 1 to 5 and when Z represents a radical of formula (IIa) then A is a radical R_3 selected from the group consisting of a straight or branched alkyl or alkenyl group of from 1 to 6 carbon atoms which may be substituted by at least one substituent selected from the group consisting of a chlorine atom, a nitrile group, phenyl and alkyl phenyl in which the alkyl has from 1 to 4 carbon atoms; and

X_1 is a triorganosilyl radical of the formula

wherein R_1, R_2 and R_3 may be the same or different, and R_1 and R_2 have the same meaning as R_3; or X_1 and A may be linked together to form a divalent radical of the following formula (Va), (Vb) or (Vc):



(Va)

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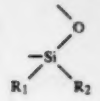
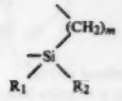


(Vb)

or



(Vc)

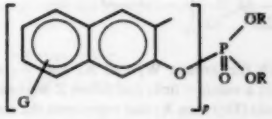
in which the silicon atom is linked to the oxygen atom at the 3-position of the naphthyl group; R_1 and R_2 may be the same or different and are as defined above, m is 1, 2 or 3 and G is as defined above, with the proviso that when there is more than one G group in the molecule they are identical; when Z represent a radical of formula (IIb) then X_1, Y_1 and T are defined according to (A), (B) or (C):

(A) Y_1 represents a radical OR in which R is branched or straight alkyl of from 1 to 8 carbon atoms or the group

$-O^-, EH^+]$

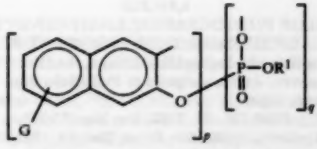
wherein E is as previously defined,

T has the same meaning as R or ammonia, and X_1 is a radical of the formula:



wherein p is 0, 1, 2 or 3 and G and R have the previously given definitions, with the provisos that when there is more than one G group in the molecule they are identical; when one OR group is an oxyammonium group the other OR group is identical and G is a hydrogen atom or a sulfonate group $-SO_3^-, EH^+$ with the EH^+ groups representing the identical radical;

(B) T is a radical OR^1 wherein R^1 is a hydrogen atom or the radical R as previously defined, and Y_1 and X_1 together form a divalent radical of the following formula:



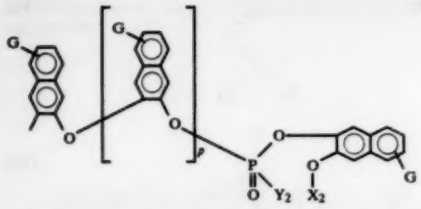
wherein p is 0, 1, 2 or 3, q is 0 or 1 and G and R^1 are as defined above, with the provisos that when q is 1, the atoms of phosphorous are bound by an oxygen atom; when p and q are both 0, X_1 and Y_1 form a valence link; when there is more than one G group in the molecule they are identical; all radicals OR^1 in the molecule are identical to each other and when OR^1 represents an oxyammonium group, the group G is a hydrogen atom or a sulfonate group

$-SO_3^-, EH^+]$

in which all EH^+ radicals are identical; or

(C) T is a radical of the following formula (IIb3)

(IIb3)



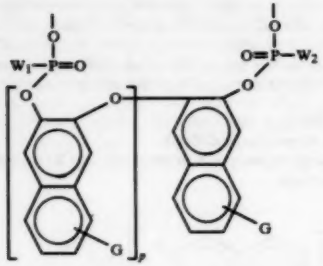
wherein p and G are as defined above;

X_2 and Y_2 together form a valency link; and

X_1 and Y_1 form a valency link; or

Y_1 and Y_2 together form a radical of the following formula (IIb4)

(IIb4)



in which the groups W_1 and X_1 and W_2 and X_2 each represent a valency link; and when Z represents a radical of formula (IIc) then X_1 also represents the same radical of formula (IIc); or Z and X_1 together for the radical

>C=O.

4,439,513

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH NAPHTHOL REDOX DYE RELEASER

Kozo Sato; Shinsaku Fujita; Hideki Naito, and Hiroshi Hara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1982, Ser. No. 453,975

Claims priority, application Japan, Dec. 29, 1981, 56-213111

Int. Cl.³ G03C 1/40, 1/10, 5/54

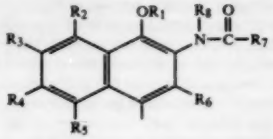
U.S. Cl. 430—203 **26 Claims**

22. A method of forming a color image comprising:

(1) imagewise exposing a silver halide color photographic light-sensitive material comprising a support having thereon a layer containing at least one kind of dye releasing 2-acylamino-1-naphthol derivative represented by the following general formula (I):

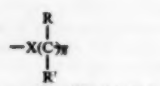
R—L—D (I)

wherein R represents a reducing group represented by the following general formula (II):

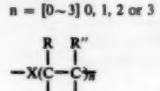


(II)

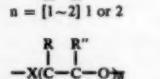
wherein R_1 represents a hydrogen atom or an acyl group having 1 to 12 carbon atoms; R_2 to R_8, which may be the same or different, each represents a hydrogen atom or a substituent selected from an alkyl group, a cycloalkyl group, an alkenyl group, an aryl group, an alkoxy group, an aryloxy group, an aralkyl group, an acylamino group, an alkylamino group, a dialkylamino group, an arylamino group, a diarylamino group, a halogen atom, an acyloxy group, a hydroxy group, a carboxy group, a cyano group, an acyl group, a carbonyl group, a substituted carbamoyl group, a sulfamoyl group, a substituted sulfamoyl group, a sulfamoylamino group, a substituted sulfamoylamino group, a ureido group, a substituted ureido group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfonylamino group, an arylsulfonylamino group, a sulfamoylamino group, a substituted sulfamoylamino group and a nitro group, and the alkyl moiety or the aryl moiety in the above described substituents may be further substituted with an alkoxy group, an aryloxy group, an acyloxy group, a halogen atom, a hydroxy group, a carboxy group, a cyano group, an acyl group, a sulfamoyl group, a substituted sulfamoyl group, a carbamoyl group, a substituted carbamoyl group, an acylamino group, a ureido group, a substituted ureido group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfonylamino group or an arylsulfonylamino group; the groups represented by R_2, R_3, R_4 or R_5 may contain up to 12 carbon atoms, and groups represented by R_6, R_7 or R_8 may contain up to 22 carbon atoms and at least one of them should contain not smaller than 8 carbon atoms; L represents a divalent connecting group between R and D selected from the group represented by the following formulae:



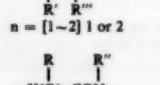
n = [0~3] 0, 1, 2 or 3



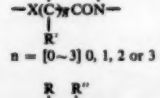
n = [1~2] 1 or 2



n = [1~2] 1 or 2



n = [0~3] 0, 1, 2 or 3



n = [1~3] 1, 2 or 3

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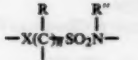
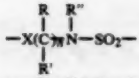
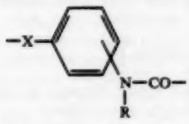
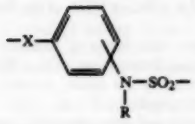


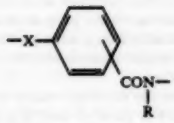
n = [0~3] 0, 1, 2 or 3

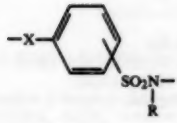


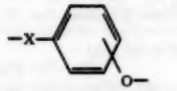
n = [1~3] 1, 2 or 3

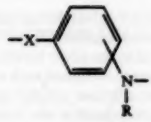


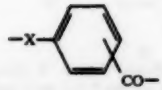


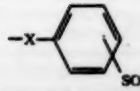












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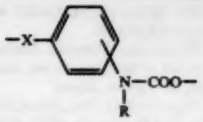
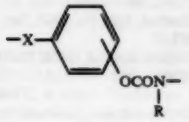
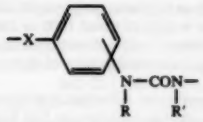
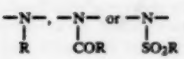






wherein R, R', R'' and R''', which may be the same or different, each represents a hydrogen atom or a substituent selected from a methyl group, an ethyl group, a hydroxymethyl group, a methoxymethyl group, a carboxymethyl group, a cyanomethyl group, a hydroxyethyl group, a methoxyethyl group, a carboxyethyl group and a cyanoethyl group; the benzene ring may be further substituted with an alkyl group, an alkoxy group, a halogen atom or a hydroxy group; and X represents —O—, —S—,



(wherein R has the same meaning as defined above); and D represents a dye or a precursor of dye,

(2) developing the exposed photographic material to release a diffusible dye and diffusing the diffusible dye into a dye receiving layer.

24. A method of forming a color image as claimed in claim **22**, wherein the development is carried out by heating.

4,439,514

PHOTORESISTIVE COMPOSITIONS

Anthony F. Garito, Radnor, Pa., assignor to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 113,552, Jan. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,007, Jun. 25, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,471

Int. Cl.[3] **G03C** *1/68*

U.S. Cl. 430—272 **16 Claims**

1. A photographic or photolithographic article comprising a substrate and at least one substantially continuous layer on said substrate of a polymerizable composition comprising at least one material having at least two acetylenic bonds, at least two of said bonds being in conjugation with one another, said layer comprising a plurality of domains, each of said domains having average dimensions less than 10,000 Angstroms and having a substantially regular array of said composition, so that said layer is imagewise polymerizable with improved resolving power upon the application of radiation to selected portions thereof.

4,439,515

LIGHT-SENSITIVE ETHYLENICALLY UNSATURATED MATERIALS CONTAINING BENZANTHRONES AND NOVEL SENSITIZERS

Fumiaki Shinozaki; Yasuo Washizawa; Tomoaki Ikeda; Sho Nakao, and Syunichi Kondoh, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 240,433, Mar. 4, 1981, Pat. No. 4,386,153, which is a division of Ser. No. 57,149, Jul. 12, 1979, Pat. No. 4,298,679, which is a division of Ser. No. 832,684, Sep. 13, 1977, Pat. No. 4,175,971. This application Apr. 14, 1983, Ser. No. 484,818

Claims priority, application Japan, Sep. 14, 1976, 51-110151

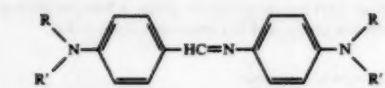
Int. Cl.³ G03C 1/68

U.S. Cl. 430—285 4 Claims

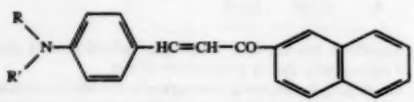
1. A light-sensitive composition consisting essentially of at least one ester of an ethylenically unsaturated double bond-containing organic acid and an aliphatic polyhydric alcohol, said ester having a molecular weight of about 1000 or less, and a photopolymerization initiator, said photopolymerization initiator consisting essentially of a combination of the components

(1) benzanthrone, a benzanthrone substituted with one or more of halogen atoms, alkyl groups having 1 to 5 carbon atoms or alkoxy groups having 1 to 5 carbon atoms, a 1,2-benzanthraquinone or a benzanthraquinone substituted with one or more of halogen atoms, alkyl groups having 1 to 5 carbon atoms or alkoxy groups having 1 to 5 carbon atoms, or a mixture thereof and

(2) a compound represented by the following general formula (d) or (e):



(d)



(e)

wherein R and R', which may be the same or different, each represents a methyl group or an ethyl group, wherein the weight ratio of component (1) to component (2) of said photopolymerization initiator ranges from about 10:1 to about 1:100 and the amount of said photopolymerization initiator ranges from about 0.1 to about 20% by weight to the weight of the ester.

4,439,516

HIGH TEMPERATURE POSITIVE DIAZO PHOTORESIST PROCESSING USING POLYVINYL PHENOL

George J. Cernigliaro, Framingham, and Charles R. Shipley, Newton, both of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed Mar. 15, 1982, Ser. No. 357,971

Int. Cl.³ G03F 7/08; G03C 5/00; B05D 3/02

U.S. Cl. 430—323 17 Claims

1. A process for increasing the photoresist distortion temperature of a photoresist film comprising a high temperature, positive working diazo sensitizer and a resin system of a thermoplastic polyvinyl phenol to in excess of the flow temperature of the polyvinyl phenol and in excess of 200° C., said sensitizer having a secondary decomposition temperature and said polyvinyl phenol having a flow temperature in excess of 200° C. and in excess of the temperature at which reaction occurs between the two, said process comprising the steps of exposing said film to activating radiation in an image pattern, developing said film and heating said film to a temperature in excess of 200° C. and for a time at least sufficient to cause reaction to occur between said sensitizer and said polyvinyl phenol, said heating step occuring during or subsequent to imaging.

4,439,517

PROCESS FOR THE FORMATION OF IMAGES WITH EPOXIDE RESIN

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 10, 1983, Ser. No. 457,107

Claims priority, application United Kingdom, Jan. 21, 1982, 8201726

Int. Cl.³ G03C 1/68

U.S. Cl. 430—328 14 Claims

1. A process for the formation of an image on a substrate which comprises

(1) exposing imagewise to actinic radiation a layer of a photoresist composition on the substrate, the photoresist composition comprising

(A) an epoxide resin and

(B) an effective amount, for curing, of

(i) a benzenoid polyamine

(ii) an aromatic compound which liberates an acid on exposure to actinic radiation, selected from

(a) chlorides, bromides, and iodides of onium bases of elements in Group VA, VIA, or VIIA of the Periodic Table,

(b) N-sulfonyloxyimides, and esters of sulfonic acids with β-hydroxypropiophenones or with o-hydroxyacylphenones,

(c) o-nitrobenzaldehydes, and

(d) α-chloroacylphenones and α-bromoacylphenones,

(2) heating the composition on the substrate such that the part or parts of the composition which have been struck by the radiation are substantially cured whereas the part or parts thereof which have not been so struck remain substantially uncured, and then

(3) treating the composition on the substrate with a solvent developer to remove the part or parts of the composition which remain substantially uncured.

4,439,518

PROCESS FOR THE PRODUCTION OF A PHOTOGRAPHIC IMAGE

Stephen R. Postle, Brentwood, England, assignor to Ciba-Geigy A.G., Basel, Switzerland

Filed Jun. 18, 1982, Ser. No. 389,729

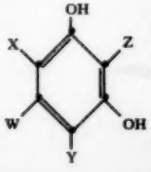
Claims priority, application United Kingdom, Jun. 19, 1981, 8119060

Int. Cl.³ G03C 5/24, 1/02

U.S. Cl. 430—402 10 Claims

1. A process for the production of a photographic black dye image which comprises

(a) imagewise exposing photographic silver halide material comprising at least one silver halide emulsion layer coated on a support, there being present in the silver halide emulsion layer (s) or in a layer in operative contact with at least one silver halide emulsion layer, a colour coupler consisting essentially of at least one compound of the formula



(I)

where each of W, Y and Z is hydrogen, chlorine or bro-

mine, a nitrogen-linked heterocyclic, $—SR_1$, where R_1 is optionally substituted alkyl having from 1 to 20 carbon atoms, optionally substituted aryl or an optionally substituted heterocycle or W, Y or Z is a group $—R_3$ where $—R_3$ is optionally substituted primary or secondary alkyl having from 1 to 20 carbon atoms of the formula

where L is an alkylene linking group $—(CH_2)_m—$ *where m is* 0 to 20, R_4 is hydrogen, alkyl having from 1 to 20 carbon atoms, or R_4 together with L form a saturated 5- or 6-membered carbocyclic ring linking group, and Q is hydrogen or a group selected from $—CO_2R_5$ or $—OCOR_5$ where R_5 is alkyl having from 1 to 20 carbon atoms; $—OR_6$ or $—CONHR_6$ or $—NHCOR_6$ where R_6 is an alkyl group having from 1 to 20 carbon atoms or is an optionally substituted aryl group; $—SO_3M$ where M is hydrogen or a cation; $—P(O)(OR_5)_2$ where R_5 is as defined above; or $—NR_7R_8$ where each of R_7 and R_8 are hydrogen or optionally substituted alkyl or aryl; or R_3 is unsubstituted tertiary alkyl, wherein the teriary atom of the alkyl group is adjacent to the benzene ring or secondary or tertiary cycloalkyl having from 3 to 20 carbon atoms or R_3 is primary, secondary or tertiary aralkyl, having from 7 to 20 carbon atoms, or Z alone is $—CO—R_1$ where R_1 is as defined above but at least one of W, Y and Z must be $—R_3$, and X is hydrogen, chlorine or bromine, a nitrogen-linked heterocycle or $—SR_1$ where R_1 is as defined above,

(b) colour developing the exposed material using a colour developing solution which comprises an aqueous alkaline solution of a primary aromatic amine colour developing agent to form simultaneously a silver image and a black dye image,

(c) optionally bleaching the silver image, and then

(d) fixing out all the silver halide in the material using an aqueous solution of a silver halide solvent.

4,439,519

SILVER-HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobutaka Ohki; Ken Kawata, and Isamu Itoh, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

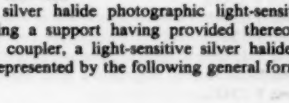
Filed May 5, 1983, Ser. No. 491,829

Claims priority, application Japan, May 6, 1982, 57-75807

Int. Cl.³ G03C *7/30*

U.S. Cl. 430—405 **18 Claims**

1. A silver halide photographic light-sensitive material, comprising a support having provided thereon a diffusion resistant coupler, a light-sensitive silver halide and a compound represented by the following general formula (I)



(I)

wherein R^1 and R^2 independently represent an alkyl group having from 1 to 5 carbon atoms, a hydroxyalkyl group having from 1 to 5 carbon atoms, an alkoxyalkyl group having from 2 to 10 carbon atoms or an alkylsulfonamidoalkyl group having from 2 to 10 carbon atoms; R^3 represents a hydrogen atom, an alkyl group having from 1 to 5 carbon atoms or an alkoxy group having from 1 to 5 carbon atoms; X represents a hydrogen atom or a group capable of being removed with alkali; Y represents

and Z represents an alkyl group, an alkenyl group, an aryl group or a heterocyclic group.

4,439,520

SENSITIZED HIGH ASPECT RATIO SILVER HALIDE EMULSIONS AND PHOTOGRAPHIC ELEMENTS

James T. Kofron, Rochester; Robert E. Booms, Churchville; Cynthia G. Jones, Bergen; John A. Haefner, Webster; Herbert S. Wilgus, Conesus, and Francis J. Evans, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,904, Nov. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 429,407

Int. Cl.³ G03C *1/04, 1/12, 1/46, 7/26*

U.S. Cl. 430—434 **64 Claims**

1. A radiation-sensitive high aspect ratio tabular grain silver halide emulsion comprised of

a dispersing medium and

silver halide grains, wherein at least 50 percent of the total projected area of said silver halide grains is provided by chemically and spectrally sensitized tabular silver halide grains having a thickness of less than 0.3 micron, a diameter of at least 0.6 micron, and an average aspect ratio of greater than 8:1.

29. In a photographic element comprised of

a support and, located thereon,

a first silver halide emulsion layer positioned to receive substantially specularly transmitted light, and

a second silver halide emulsion layer positioned to receive light transmitted through said first silver halide emulsion layer,

the improvement wherein, said first silver halide emulsion layer contains chemically and spectrally sensitized tabular silver halide grains having a thickness of less than 0.5 micron, a diameter of at least 0.6 micron, an average aspect ratio of at least 12:1, and an average diameter of at least 1.0 micron, which account for at least 70 percent of the total projected area of the silver halide grains present in said first emulsion layer.

4,439,521

METHOD FOR PRODUCING SELF-REPRODUCING MAMMALIAN PANCREATIC ISLET-LIKE STRUCTURES

Michael C. Archer, Mississauga, and Kanti Jain, Toronto, both of Canada, assignors to Ontario Cancer Institute, Toronto, Canada

Filed Oct. 21, 1981, Ser. No. 313,494

Int. Cl.³ A01N *1/02;* **C12N** *5/00, 5/02*

U.S. Cl. 435—1 **50 Claims**

1. A method for producing mammalian pancreatic islet-like structures hereinafter called ILS's, having histological characteristics and insulin-producing properties corresponding to those of natural isolated fetal pancreatic islets and islets obtained from adult animals maintained in culture, comprising establishing under conditions promoting the growth of mammalian cells, a culture comprising at least one pancreatic tissue-derived body attached to a substrate compatible with mammalian cells and capable of accepting the attachment of mammalian pancreatic islet tissue thereto, and immersed in a liquid tissue culture medium capable of sustaining mammalian cell growth, said body being selected from the group consisting of:

(a) intact mammalian pancreatic islets isolated directly from postpartal pancreatic tissue and present in the culture at an islet population density of less than about 10 islets per ml of the liquid culture medium;

(b) pieces of mammalian postpartal pancreatic duct;

(c) clusters of coherent pancreatic cells obtained by mild digestion of pieces of whole mammalian postpartal pancreas with a solution of a connective tissue-lysing enzyme, said clusters being substantially free of pancreatic exocrine tissue;

(d) cells characterized by having an oblong flat configuration with highly serrated ends and tenacious attachment to the substrate and obtained by culturing a body selected from the group consisting of said bodies (a), (b), and (c) above and (e) below for prolonged periods in said culture under said mammalian cell-growth promoting conditions;

(e) ILS's obtained by culturing a body selected from the group consisting of said bodies (a), (b), (c), and (d) for prolonged periods under said mammalian cell-growth promoting conditions; and maintaining said culture for a period sufficient to permit neogenesis of discrete ILS's connected to cell tissue outgrowing from the body and attached to the substrate; detaching said ILS's from the said outgrowing tissue; and recovering said detached ILS's from the culture.

4,439,522

PROTEOLYTIC ENZYME COMPOSITION

Roy U. Schenk, Madison, Wis., assignor to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation of Ser. No. 55,770, Jul. 9, 1979, abandoned, which is a continuation of Ser. No. 922,646, Jul. 7, 1978, abandoned, which is a continuation of Ser. No. 855,008, Nov. 25, 1977, abandoned, which is a continuation of Ser. No. 763,132, Jan. 27, 1977, abandoned, which is a continuation of Ser. No. 432,167, Jan. 10, 1974, abandoned. This application Jun. 5, 1980, Ser. No. 157,152

Int. Cl.³ C12N *9/96, 9/54;* **C07G** *7/00;* **C12R** *1/085*

U.S. Cl. 435—188 **1 Claim**

1. A proteolytic enzyme-containing composition having stabilized proteolytic enzyme activity and the ability to convert scleroproteins to water soluble products without racemization consisting essentially of an anionic detergent selected from the group consisting of alkyl sulfates, alkyl sulfonates, alkyl-aryl sulfates and alkyl-aryl sulfonates, and an enzyme system consisting of a proteolytic enzyme oligomer derived from *Bacillus cereus* that is retained by an ultrafilter membrane that retains molecules larger than 10,000 molecular weight and is reversibily interconvertible with a proteolytic active subcomponent that passes through the same membrane that retains the oligomer, said enzyme system retaining more than 75% of its proteolytic activity for at least 5 hours when said composition is mixed with a 2% corn gluten slurry and said enzyme system converts said corn gluten to water soluble products during said 5 hours.

4,439,523

PRODUCTION OF SINGLE CELL PROTEIN MATERIAL

Emil A. Malick; John W. Vanderveen; Donald O. Hitzman, and Eugene H. Wegner, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 7, 1981, Ser. No. 280,963

Int. Cl.³ C12N *1/00, 1/02*

U.S. Cl. 435—243 **6 Claims**

1. A process for producing a cellular product comprising:

(a) withdrawing a fermentation effluent from a first fermentation zone;

(b) subjecting said fermentation effluent to sterilizing conditions to produce a sterilized fermentation effluent;

(c) utilizing said sterilized fermentation effluent as at least a portion of the nutrient media for a high cell density fermentation process conducted within a high cell density fermentation zone;

(d) removing a stream containing microbial cells from said high cell density fermentation zone; and

(e) drying said stream containing microbial cells to produce a dried cellular product.

4,439,524

STEREOSELECTIVE RESOLUTION OF PHENYLGLYCINE DERIVATIVES WITH ENZYME RESINS

Hermann Schutt, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 161,811, Jun. 23, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,569

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927535

Int. Cl.³ C07B *20/00*

U.S. Cl. 435—280 **10 Claims**

1. In a process for the stereoselective resolution of DL-phenylglycine derivatives by hydrolysing the ester or amide grooups of N-acyl-L-phenylglycine esters or amides in N-acyl-DL-phenylglycine esters or amides by the action of enzymes, separating the N-acyl-D-phenylglycine esters or amides from the N-acyl-L-phenylglycines and then, if desired, subjecting the esters or amide groups of the D-enantiomers and the acyl groups to acid hydrolysis, the improvement which comprises allowing enzymes selected from the group consisting of a sevine or sulfhydryl protease which are bonded to carriers to act on the N-acyl-DL-phenylglycine esters or amides in an inert two-phase solvent mixture consisting of water-immiscible organic solvent and water in a pH range of 6–8.

4,439,525

HIGH METHIONINE CONTENT *PICHIA PASTORIS* YEASTS

Lucas K. Shay, and Eugene H. Wegner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 9, 1981, Ser. No. 300,521

Int. Cl.³ C12N *1/32, 1/16;* **C12R** *1/84*

U.S. Cl. 435—247 **37 Claims**

1. A method of producing a single cell protein material which comprises culturing under aerobic aqueous fermentation conditions at least one high methionine producing *Pichia pastoris* species in aqueous ferment employing effective amounts of oxygenated hydrocarbon energy substrate, assimilable nitrogen source, and mineral salts medium, and recovering the resulting cellular products as a single cell protein material, wherein said high methionine producing *Pichia pastoris* species is selected from the group consisting of:

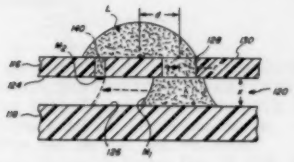
Pichia pastoris Y-12439,
Pichia pastoris Y-12440,
Pichia pastoris Y-12441,
Pichia pastoris Y-12442,
Pichia pastoris Y-12443,
Pichia pastoris Y-12444,
Pichia pastoris Y-12445,
Pichia pastoris Y-12446,
Pichia pastoris Y-12448,
Pichia pastoris Y-12449,
Pichia pastoris Y-12450,
Pichia pastoris Y-12451,
Pichia pastoris Y-12452,
Pichia pastoris Y-12453,
Pichia pastoris Y-12454,
Pichia pastoris Y-12455,
Pichia pastoris Y-12456,
Pichia pastoris Y-12458,
Pichia pastoris Y-12459,
Pichia pastoris Y-12460,
Pichia pastoris Y-12461,
Pichia pastoris Y-12462,
Pichia pastoris Y-12463,
Pichia pastoris Y-12465,
Pichia pastoris Y-12466,
Pichia pastoris Y-12467,
Pichia pastoris Y-12469,
Pichia pastoris Y-12470, and
Pichia pastoris Y-12493.

4,439,526

CLUSTERED INGRESS APERTURES FOR CAPILLARY TRANSPORT DEVICES AND METHOD OF USE

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,753
Int. Cl.³ G01N *27/28, 1/00*
U.S. Cl. 436—180 7 Claims



5. A method for introducing a quantity of liquid into an interior capillary transport passage of a liquid transport device, the method comprising the steps of

(a) positioning such transport device having an exterior surface that includes a cluster of at least two apertures extending to said interior passage, only one of said apertures having a maximum flow-through dimension sufficiently large as to allow liquid to independently initiate transport in said passage when placed at said cluster, with said one larger aperture located within a predetermined error range measured from a desired metering position, the others of said apertures being sized to deliver to said passage a meniscus at a position that is capable of coalescing with liquid advancing within said passage, but not independently intiating flow within said passage and

(b) depositing such liquid onto said surface so as to encompass said one larger aperture and at least one other aperture of said cluster.

4,439,527

COMPOSITION AND METHOD FOR THE DETECTION OF HYDROGEN PEROXIDE

Bernd Pakebusch, Hessheim; Carsten A. Carstensen, Heuchelheim; Bernward Sojka, Viernheim, and Hans Lange, Lampertheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jun. 7, 1982, Ser. No. 385,760
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125667
Int. Cl.³ G01N *21/78, 33/50*
U.S. Cl. 436—135 6 Claims

6. Method as claimed in claim 5 for determining a hydrogen peroxide forming substrate, wherein the combined detection composition also contains a reagent necessary to release hydrogen peroxide from a hydrogen peroxide forming substrate.

4,439,528

SPONTANEOUS OPAL GLASS COMPOSITIONS

Roger J. Araujo, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 2, 1983, Ser. No. 500,565
Int. Cl.³ C03C *3/04, 3/10, 3/30*
U.S. Cl. 501—32 3 Claims

1. A spontaneous opal glass having a softening point in excess of 750° C., a coefficient of thermal expansion between about 60-90$\times 10^{-7}$/°C., a crystal liquidus temperature below 1350° C., a viscosity at the liquidus temperature of at least 200 poises, excellent resistance to attack by alkalies, and wherein spherically-shaped, glassy droplets constitute the opal phase, said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of about

SiO_2	50–72	Na_2O	0–8
CaO	10–40	Al_2O_3	0–2
ZnO	4–40	F	0–5

4,439,529

GLASS AND GLASS OBJECTS

Hendrik J. M. Joormann; Hendrik Verweij, and Jan Haisma, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 119,324, Feb. 7, 1980, abandoned. This application Aug. 31, 1981, Ser. No. 298,131
Claims priority, application Netherlands, May 18, 1979, 7903914
The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.
Int. Cl.³ C03C *3/16*
U.S. Cl. 501—45 6 Claims

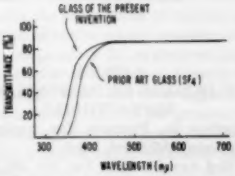
1. A glass consisting essentially of phosphorous pentoxide, lead monoxide, an alkali earth oxide, and an alkali oxide, said glass having a composition of 45–55 mol.% P_2O_5, 15–40 mol.% BaO, 5–35 mol.% PbO, 5–15 mol.% Li_2O, 0–2 mol.% Al_2O_3 and 0–6 mol.% F, wherein up to 25% of said BaO may be replaced by an equimolar quantity of at least one of CaO, MgO, and SrO, and wherein up to 25% of said Li_2O may be replaced by an equimolar quantity of at least one other alkali metal oxide, said glass having a corrosion resistance such that after having been stored at 50° C. in relative humidity of 99%, the glass is free from stains.

4,439,530

OPTICAL GLASS

Hidemi Tajima, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Jan. 20, 1983, Ser. No. 459,552
Claims priority, application Japan, Jan. 25, 1982, 57-8991
Int. Cl.³ C03C *3/16*
U.S. Cl. 501—45 1 Claim



1. An optical glass consisting essentially of, in % by weight,
18 to 38% P_2O_5;
3 to 30% Na_2O+K_2O,
with the proviso of
0 to 30% Na_2O and
0 to 30% K_2O;
15 to 65% PbO;
1 to 45% Ta_2O_5;
0 to 20% Nb_2O_5;
0 to 15% TiO_2+WO_3;
0 to 25% $BaO+CaO+ZnO+SrO+MgO$,
with the proviso of
0 to 25% BaO,
0 to 5% CaO,
0 to 25% ZnO,
0 to 20% SrO,
0 to 10% MgO, and
0 to 32% K_2O+BaO;
0 to 15% B_2O_3;

0 to 3% Li_2O;
0 to 3% Al_2O_3;
0 to 3% ZrO_2;
0 to 3% Y_2O_3;
0 to 3% Gd_2O_3; and
0 to 3% La_2O_3.

4,439,531

CDO-THO_2-FREE, HIGHLY REFRACTIVE OPTICAL GLASS

Karl Mennemann, Taunusstein, and Volkmar Geiler, Mainz-Finthen, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,968
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130039
Int. Cl.³ C03C *3/08, 3/10*
U.S. Cl. 501—75 **5 Claims**

1. CdO- and ThO-free, highly refractive optical glass which are stable to devitrification and have a refractive index nd of 1.85–2.05 and an Abbe index vd of 25–43, consisting essentially of the following composition (in percent by weight):

SiO_2	5–15
B_2O_3	2.5–8
$SiO_2 + B_2O_3$	7–23
SiO_2/B_2O_3	1.6–1.9
La_2O_3	43–56
Gd_2O_3	0–14
$La_2O_3 + Gd_2O_3$	43–60
ZrO_2	5–9
Nb_2O_5	0–15
Ta_2O_5	0–20
$Nb_2O_5 + Ta_2O_5$	11–22

4,439,532

CASTING SLIP MADE FROM SPINEL AND SPINEL REFRACTORIES

Greene W. Strother, Jr., Brazoria, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 26, 1981, Ser. No. 296,605
Int. Cl.³ C04B *35/04*
U.S. Cl. 501—117 **6 Claims**

1. A casting slip comprising a low viscosity slurry comprised of:

(a) spinel of $M^I M^{II}_2 O_4$ wherein M^I is one or more metal atoms having a valence of 1, 2 or 4 present such that the atomic ratio of M^I to M^{II} is about 2, M^{II} is the same or a different metal atom having a valence of 2, 3 or 6 different from M^I present such that the total atomic ratio of M^{II} is twice that M^I said spinel being a mixture of spinel precursor calcined to between about 400° C. and 1400° C. and the same or a different spinel or batch of precursor calcined then fired (sintered) above about 1500° C., the calcined spinel being present in from about 10 to 100, of which up to 33% of the total composition may be precursor, and from zero to 67% by weight of sintered spinel, said spinels being present in said slurry to provide about 50 to 75 percent solids content, the balance being

(b) water, and

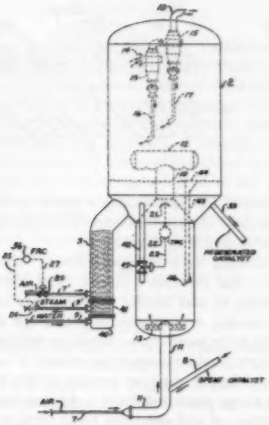
(c) from about 0.1 to 5% of an anti-flocculating agent.

4,439,533

FLUID PARTICLE BACKMIXED COOLING PROCESS

David A. Lomas, Arlington Heights, and Gregory J. Thompson, Waukegan, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 273,296, Jun. 15, 1981, Pat. No. 4,353,812. This application Aug. 30, 1982, Ser. No. 412,698
Int. Cl.³ B01J *29/38*; C10G *11/18*; F28D *13/00*; G06G *7/58*
U.S. Cl. 502—6 **7 Claims**



1. A process for the controlled cooling of hot fluidized catalysts which comprises:

(a) passing spent catalyst having coke deposited thereon, and oxygen-containing regeneration gas to the lowermost portion of a catalytic combustion chamber containing a relatively dense bed of fluidized catalyst to oxidize said coke;

(b) passing said oxidized catalyst upward through said combustion chamber to an uppermost section of said combustion chamber containing catalyst in a relatively dilute phase;

(c) passing said oxidized catalyst through said uppermost section of said combustion chamber to a surmounted disengagement chamber having a relatively dense phase of catalyst collecting in the lowermost portion of said disengagement chamber;

(d) passing said catalyst from said lowermost portion of said disengagement chamber to a heat removal zone extrinsic from said combustion and disengagement chamber;

(e) cooling said catalyst in said extrinsic heat removal zone by indirect heat exchange against a cooling fluid entered and removed from said extrinsic heat removal zone;

(f) fluidizing said catalyst in said heat removal zone by passage of a fluidizing gas in direct contact with said catalyst being cooled and wherein said catalyst is continuously mixed;

(g) passing said cooled catalyst back to said lowermost portion of said disengagement chamber, wherein the extent of fluidization in step (f) is controlled by

(i) sensing the quantity of said cooling fluid being removed from said indirect heat exchange means in step (e);

(ii) comparing that sensed quantity with a predetermined set point to generate a controller output signal; and,

(iii) transmitting said controller output signal to a flow regulation means which regulates the quantity of fluidized gas passed in step (f) to said extrinsic heat removal zone.

2. The process of claim 1 wherein said catalyst in said lowermost portion of said disengagement chamber is passed directly to said combustion chamber.

3. The process of claim 2 wherein the quantity of said cata-

lyst passed from said disengagement chamber to said combustion chamber is controlled by:

(i) sensing the temperature in the upper locus of said combustion zone;

(ii) comparing that sensed temperature with a predetermined set point to generate a catalyst flow control output signal; and

(iii) transmitting said flow control output signal to a flow regulation means which regulates the quantity of said catalyst passed from said disengagement chamber to said combustion chamber.

4,439,534

CATALYST OF CHROMIUM OXIDE MICROSPHERES AND PROCESS FOR ITS PREPARATION

Louis Foulletier, Oullins, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 24, 1981, Ser. No. 324,437

Claims priority, application France, Dec. 29, 1980, 80 27659

Int. Cl.³ B01J *21/08, 23/86, 35/08*

U.S. Cl. 502—8 **9 Claims**

1. A catalyst having a chromium oxide base consisting essentially of microspheres of amorphous chromium trioxide having a diameter, between about 100 to 3,000 um.

4,439,535

ZEOLITE ADSORBENT FOR SEPARATION OF PARA-XYLENE

William Smolin, Fishkill, and John H. Estes, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 3, 1982, Ser. No. 414,287

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.³ B01J *29/06*

U.S. Cl. 502—62 **4 Claims**

3. A synthetic crystalline sodium aluminosilicate zeolite HP, containing a pyridine in amount of about 3.3–20 wt.% of said zeolite, having a lattice constant of 25.02–25.10 Å.

4. A synthetic crystalline sodium aluminosilicate zeolite HP, containing a pyridine in amount of at least about 3.3 wt.% of said zeolite as claimed in claim 3 wherein said pyridine is pyridine se or a substituted pyridine selected from the group consisting of 2-picoline, 3-picoline, 4-picoline, 2,4-lutidine, 2,6-lutidine, and 3,4-lutidine.

4,439,536

HYDROCARBON CRACKING CATALYST

Brent J. Bertus, and Dwight L. McKay, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 276,402, Jun. 22, 1981, Pat. No. 4,386,015, which is a division of Ser. No. 139,483, Apr. 11, 1980, Pat. No. 4,334,979. This application Dec. 13, 1982, Ser. No. 449,319

Int. Cl.³ B01J *29/04, 20/18*

U.S. Cl. 502—64 **34 Claims**

1. A process for passivating at least one metal selected from the group consisting of nickel, vanadium and iron, on a zeolite-containing cracking catalyst comprising contacting the cracking catalyst with at least one treating agent selected from germanium and germanium compounds to impart to the cracking catalyst a germanium concentration of from about 0.01 to about 0.5 weight percent.

7. A process as in claim 1 wherein the cracking catalyst is contacted with at least one germanium compound selected from the group consisting of germanium oxide, germanium sulfide, germanium nitride, germanium halide, germanium selenide, germanium telluride and germanium hydride.

22. A process for increasing the activity of a used zeolite-containing cracking catalyst contaminated by at least 3000 ppm vanadium equivalents comprising contacting said cracking catalyst with at least one treating agent selected from the group consisting of germanium and a germanium compound so as to deposit on said cracking catalyst a sufficient amount of treating agent to impart to said cracking catalyst a germanium concentration of between about 0.0001 and about 4 percent by weight of contacted cracking catalyst.

29. A process as in claim 22 further comprising contacting the cracking catalyst with at least one compound selected from the group consisting of antimony, tin and bismuth compounds to impart to said cracking catalyst a concentration of at least one antimony, tin and bismuth of from about 0.001 to about 2 percent by weight of the thus further contacted cracking catalyst.

4,439,537

PROCESS FOR THE PREPARATION OF CATALYST COMPONENT FOR THE POLYMERIZATION OF OLEFINS

Atsushi Murai, Kanagawa; Minoru Terano, Chigasaki; Yoshikazu Hitosugi; Kouhei Kimura, both of Kanagawa; Masuo Inoue, and Katsuyoshi Miyoshi, both of Chigasaki, all of Japan, assignors to Toho Titanium Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,858

Claims priority, application Japan, Jun. 29, 1981, 56-99674; Oct. 2, 1981, 56-156162; Dec. 18, 1981, 56-203589; Dec. 26, 1981, 56-209556; Dec. 26, 1981, 56-209557

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—105 **25 Claims**

1. A process for the preparation of catalyst component for the polymerization of olefins which comprises contacting with each other (a) a fatty acid salt of magnesium, (b) an electron donor compound and (c) a titanium halide of the general formula: TiX_4, wherein X represents a halogen atom, said three ingredients (a), (b) and (c) being copulverized simultaneously in the absence of any solvent, or said fatty acid salt of magnesium being copulverized with said electron donor compound or with said titanium halide in the absence of any solvent to form a copulverization product, said copulverization product then being brought into contact with said titanium halide or with said electron donor compound respectively, said copulverization product formed by the copulverization of the fatty acid salt of magnesium with the electron donor compound forming essentially a solid copulverization product.

2. A process for the preparation of catalyst component for the polymerization of olefins which comprises contacting (a) a fatty acid salt of magnesium, (b) an electron donor compound and (c) a titanium halide of the general formula: TiX_4, wherein X represents a halogen atom, said three ingredients (a), (b) and (c) being mixed simultaneously in the presence of an organic solvent, or any two ingredients selected from said three ingredients (a), (b) and (c) being mixed with each other in the presence of an organic solvent to form a mixed product, said mixed product then being mixed directly or after removing the solvent therefrom with the residual ingredient, said mixed product formed by mixing the fatty acid salt of magnesium with the electron donor compound forming essentially a solid mixed product by removing the solvent therefrom or forming essentially a suspension.

3. A process for the preparation of catalyst component for the polymerization of olefins which comprises contacting (a) a fatty-acid salt of magnesium, (b) an electron donor compound and (c) a titanium halide of the general formula: TiX_4, wherein X represents a halogen atom, said three ingredients (a), (b) and (c) being mixed simultaneously in the absence of any solvent, or any two ingredients selected from said three ingredients (a), (b) and (c) being mixed with each other in the absence of any solvent to form a mixed product, said mixed product then being mixed with the residual ingredient, said mixed product formed by mixing the fatty acid salt of magnesium with the electron donor compound forming essentially a solid mixed product.

4,439,538

SUPPORTED CATALYST FOR POLYMERIZING OLEFINS

Kyoung R. Im Han, Dobbs Ferry, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 24, 1982, Ser. No. 422,634
Int. Cl.³ C08F 4/02, 4/64
U.S. Cl. 502—105 58 Claims

1. A catalytic system for polymerizing olefins comprising:

(a) a component containing an organometallic compound of Groups I–III of the periodic table, and

(b) a component containing titanium obtained by steps comprising:

treating a ferrous chloride support with at least one organic electron donor to form an adduct,

milling the ferrous chloride, and

post-treating the milled ferrous chloride adduct with a liquid titanium compound containing halogen.

4,439,539

CATALYTIC COMPONENT FOR POLYMERIZATION OF α-OLEFIN AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN

Masaru Takitani; Shizuo Tomiyasu, and Keikichi Baba, all of Shinnanyo, Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,585
Claims priority, application Japan, Jun. 11, 1981, 56-89859
Int. Cl.³ C08F 4/64
U.S. Cl. 502—112 2 Claims

1. A catalytic component for polymerization of an α-olefin, prepared through steps including:

(a) a step in which an organo-magnesium compound expressed by the generic formula of R'MgX' (wherein R' represents a hydrocarbon group having 1 to 20 carbon atoms and X' either a halogen atom chosen out of chlorine, bromine and iodine or a hydrocarbon group having 1 to 20 carbon atoms) is allowed to react with carbon tetrahalide in the presence of an electron donor compound to obtain a solid product through a solid-liquid separation process, at a temperature between −50° C. and 100° C.;

(b) a step in which the separated solid is heat treated with a carbon halide at a temperature between 40° C. and 80° C.;

(c) a step in which the heat treated solid product is treated with phenols at a temperature between 90° C. and 180° C., the amount of the phenols used is 0.01 to 10 mol per mol of magnesium contained in the heat treated solid product; and

(d) another step in which the phenol treated product is treated further with a halogenated titanium compound at a temperature between room temperature and 150° C., the amount at the halogenated compound used is at least 0.01 mol per mol of the magnesium contained in the phenol treated product.

4,439,540

CATALYSTS AND COMPONENTS OF CATALYSTS FOR POLYMERIZING OLEFINS

Giuliano Cecchin, Ferrara, and Enrico Albizzati, Arona, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Division of Ser. No. 134,773, Mar. 28, 1980, Pat. No. 4,294,721, which is a continuation of Ser. No. 921,717, Jul. 3, 1978, abandoned. This application Sep. 29, 1981, Ser. No. 306,719
Claims priority, application Italy, Jul. 4, 1977, 25345 A/77
Int. Cl.³ C08F 4/64
U.S. Cl. 502—125 3 Claims

1. Catalysts for the polymerization of olefins comprising the product obtained by mixing:

(A) an alkyl Al compound or an alkyl Al compound of which from 5 to 90% is in a combined form with an electron-donor compound selected from the group consisting of esters of aromatic carboxylic acids and of inorganic acids, secondary amines and tertiary amines, with

(B) a solid catalyst-forming component obtained by reacting a Ti compound containing at least one Ti-halogen linkage with at least one of the following substances:

(1) a hydrocarbyl electron-donor compound ED which does not contain active hydrogen atoms and an adduct (a) of a Mg dihalide with at least one hydrocarbyl electron-donor compound AH containing active hydrogen atoms and present in the adduct in an amount of at least 0.5 mole/mole of Mg dihalide, electron-donor compound ED being reacted in an amount of not less than 0.05 mole/mole of compound AH of the adduct;

(2) an adduct (b) of at least a Mg dihalide with a compound AH and ED, as defined in (1) above, compound ED being present in an amount ranging from 0.05 to 1.0 mole/mole of compound AH, and adducts (a) and (b) being prepared without co-grinding of the Mg dihalide with compounds AH and ED;

the amount of compound ED which remains in the solid after extraction thereof with $TiCl_4$ at 80° C. for two hours being comprised between 0.3 and 3.0 moles/gram atom of Ti, and the amount of Ti compounds extractable with $TiCl_4$ at 80° C. being lower than 50%.

2. Catalysts according to claim 1, in which the alkyl Al compound of component (A) is an Al trialkyl and the electron-donor compound is an ester of silicic acid.

3. Catalysts according to claim 2, in which the silicic acid ester is ethyl silicate.

4,439,541

CATALYTIC COMPONENT FOR POLYMERIZATION OF α-OLEFIN AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN

Masaru Takitani; Shizuo Tomiyasu, and Keikichi Baba, all of Shinnanyo, Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,584
Claims priority, application Japan, Jun. 11, 1981, 56-89860
Int. Cl.³ C08F 4/64
U.S. Cl. 502—125 1 Claim

1. A catalytic component for polymerization of an α-olefin, prepared through steps including:

(a) a step in which an organo-magnesium compound expressed by the generic formula of RMgX (wherein R represents a hydrocarbon group having 1 to 20 carbon atoms and X either a halogen atom or a hydrocarbon group having 1 to 20 carbon atoms) is allowed to react with carbon tetrahalide in the presence of an electron donor compound to obtain a solid product, at a temperature between −50° C. and 100° C.;

(b) a step in which said solid product is reacted with phenols at a temperature between 90° and 180° C.; and

(c) a step in which said phenol solid product of step (b) is reacted with at least 0.01 mol of a halogenated titanium compound per mol of the magnesium contained in the product of step (b), at a temperature between room temperature and 150° C.

4,439,542

NOVEL BORIDE CATALYSTS AND PROCESS FOR THE PREPARATION AND USE THEREOF

Alan Bonny, Shaker Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 17, 1982, Ser. No. 408,859
Int. Cl.³ B01J 21/02
U.S. Cl. 502—207 26 Claims

1. A novel heterogeneous boride catalyst for the treatment of carbonaceous materials comprising:

a polyborane anion; and

a Group VIII metal.

4,439,543

CO REDUCED CHROMYL HALIDE ON SILICA CATALYST

Max P. McDaniel, Bartlesville, and Phil M. Stricklen, Ochelata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 5, 1982, Ser. No. 405,486
Int. Cl.³ C08F 4/24
U.S. Cl. 502—228 19 Claims

1. A method comprising:

(1) treating a silica material having surface hydroxy groups in an oxygen containing ambient at a temperature sufficient to remove some but not all of said hydroxy groups;

(2) contacting the thus-treated silica with a chromyl halide at an elevated temperature to give a silica composition having both chromium and halogen as a part thereof; and

(3) thereafter contacting said chromium and halogen containing silica composition with an ambient comprising carbon monoxide at an elevated temperature to give a final silica composition containing both chromium and halogen.

4,439,544

SUPPORT COBALT-SILICA COPRECIPITATED HYDROGENATION CATALYST

James L. Carter, and Allan E. Barnett, both of Westfield, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 514, Jan. 2, 1979, abandoned. This application Jun. 24, 1980, Ser. No. 162,810
Int. Cl.³ B01J 21/08, 23/74
U.S. Cl. 502—234 8 Claims

1. A calcined and supported coprecipitated catalyst consisting essentially of cobalt, silica, and solid porous particles, said catalyst being characterized as having a B.E.T. total surface area ranging from about 150 to about 350 m^2/g and a reduced metal surface area ranging from about 5 to about 20 m^2/g as determined by hydrogen chemisorption, after reduction at 400° C., wherein the amount of cobalt in the catalyst ranges from about 25 wt.% to about 70 wt.% based on the total weight of the calcined and reduced catalyst, wherein said catalyst has been prepared by coprecipitating cobalt and silicate ions in the presence of solid porous particles.

2. The catalyst in accordance with claim 1 wherein the catalyst contains about 0.1 wt.% or less sodium based on the total weight of the active catalyst.

3. The catalyst in accordance with claim 1 wherein the solid porous particles are selected from the group consisting of kieselguhr, infusorial earth, diatomaceous earth, siliceous earth, silica and alumina.

4,439,545

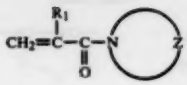
ACRYLIC COPOLYMERS OF N-ACRYLOYLPOLYMETHYLENEIMINES OR N-ACRYLOYLDIALKYLAMIDES, N,N'-ACRYLOYLDIAMINOALCANES AND N-ACRYLOYLAMINOACIDS (OR ESTERS) THEIR PREPARATION AND USE AS CATION EXCHANGERS

Christian Aspisi, Boulbon; Bernard Calas, Saint Gely du Fesc; Jacques Daunis, Montpellier; Michel Follet, Aramon; Robert Jacquier, and Joseph Parello, both of Montpellier, all of France, assignors to Societe d "Expansion Scientifique "Expansia", Paris, France

Filed Nov. 10, 1982, Ser. No. 440,441
Claims priority, application United Kingdom, Nov. 19, 1981, 8134861
Int. Cl.³ B01J 39/20; C08F 220/58, 220/60
U.S. Cl. 521—32 7 Claims

1. New acrylic copolymers comprising:

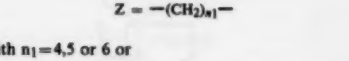
from 30% to 90%, by weight, of a monomer (matrix) corresponding to an N-acryloylpolymethylenimine of formula:



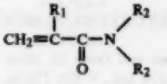
with R_1=H or —CH_3

$Z = -(CH_2)_{n1}-$

with n_1=4,5 or 6 or



or a N-acryloyldialkylamide, of formula:

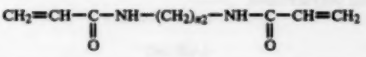


with

R_1 having the same meaning as above

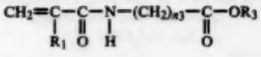
R_2=—CH_3 or —C_2H_5

from 2% to 50%, by weight, of a monomer (linker) corresponding to an N,N'-diacryloyldiaminoalcane of formula



with n_2=1 or 2

and from 2% to 65%, by weight, of a monomer (functionalization agent) corresponding to an acryloylaminoacid or ester, racemic of formula:



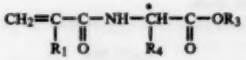
with

R_1=H or —CH_3

R_3=H or —CH_3

n_3=1, 2, 3 or 5

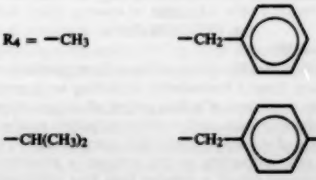
or an asymetric N-acryloylaminoacide (or ester) (L series) of the formula:



with

R_1=H or —CH_3

R_3 having the same meaning as above



-continued

$-CH_2(CH_3)_2$ $-CH_2-CH_2-S-CH_3$

$-(CH_2)_4-NH_2$

or the N-acryloyl (L) proline, or its methyl ester of the formula:

with

R_1=H or $-CH_3$

R_3 having the same meaning as above.

4,439,546

SCRAP RIM POLYURETHANE MODIFIED EXTENDER POLYOLS

Michael E. Brennan, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 5, 1983, Ser. No. 520,884
Int. Cl.³ C08L 67/02
U.S. Cl. 521—48 20 Claims

1. A mixture of scrap reaction injection molded polyurethane modified extender polyols, being produced by reacting a dibasic acid with an aklylene glycol and recycled polyethylene terephthalate in the presence of scrap reaction injection molded polyurethane.

4,439,547

ANTI-LUMPING AND FAST-COOL VINYL AROMATIC EXPANDABLE POLYMER PARTICLES

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 462,157, Jan. 31, 1983. This application May 16, 1983, Ser. No. 495,317
The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.
Int. Cl.³ C08J 9/18
U.S. Cl. 521—56 4 Claims

1. Expandable vinyl aromatic polymer particles consisting of vinyl aromatic polymer particles containing dispersed throughout (1) 0.5 to 4.0 percent by weight of a graded diblock rubbery copolymer of 2–50 weight percent of polymerized vinyl aromatic monomer and 50–98 weight percent of polymerized conjugated diene and (2) a blowing agent; said expandable particles exhibiting anti-lumping properties when pre-expanded and fast-cool properties in molded products produced there from.

4,439,548

MODIFIED POLYURETHANE PRODUCT HAVING IMPROVED LOAD-BEARING CHARACTERISTICS

Morey Weisman, 147-23 Charter Rd., Jamaica, N.Y. 11435

Continuation-in-part of Ser. No. 248,228, Mar. 27, 1981, Pat. No. 4,348,489, which is a continuation of Ser. No. 329,754, Feb. 3, 1973, abandoned. This application Sep. 3, 1982, Ser. No. 414,884
Int. Cl.³ C08G 18/14
U.S. Cl. 521—130 8 Claims

1. A modified flexible polyurethane foam product of low density derived from a formulation including an intermediate constituted by a mixture of a first polyol of a type adapted to yield a low density foam, and a polymer/polyol produced by polymerization of at least one monomer component in a second polyol in a ratio imparting to the product a predetermined degree of firmness which is greater than that obtainable in a foam derived entirely from the first polyol intermediate and is less than that obtainable in a foam derived entirely from a polymer/polyol intermediate, and a thermoplastic additive whose dielectric loss index is greater than that of a polyurethane foam; the additive being in a relative amount imparting to the modified product a loss index approaching that of polyvinyl chloride to produce an acceptable dielectric heating response in a high-frequency electric field.

4,439,549

NOVEL AROMATIC POLYESTER POLYOL MIXTURES MADE FROM POLYETHYLENE TEREPHTHALATE RESIDUES AND ALKYLENE OXIDES

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,727
Int. Cl.³ C08G 18/14
U.S. Cl. 521—131 18 Claims

1. A mixture of aromatic polyols having ester functionalities for use in preparing rigid foams, being produced by the process comprising reacting a polyethylene terephthalate residue containing ester functionalities with an alkylene oxide in the presence of a basic catalyst to give an aromatic polyester polyol.

4,439,550

AROMATIC POLYOLS MADE FROM RECYCLED POLYETHYLENE TEREPHTHALATE WASTE STREAMS, ALKYLENE GLYCOL AND DIBASIC ACID WASTE STREAMS

Michael E. Brennan, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,778
Int. Cl.³ C08G 18/14
U.S. Cl. 521—131 18 Claims

1. A mixture of aromatic polyols having hydroxyl and ester functionalities for use in preparing rigid foams, being produced by the process comprising

a. esterifying, in the absence of a catalyst, a residue from dibasic acid manufacture which comprises one or more acids from the group consisting of glutaric acid, succinic acid and adipic acid, with an alkylene glycol to produce a polyester polyol and

b. transesterifying, in the absence of a catalyst, recycled polyethylene terephthalate with the polyester polyol reaction product from the previous step.

4,439,551

PACKAGING FOAM POLYURETHANE COMPOSITION EMPLOYING NOVEL POLYOL BLEND

Ernest L. Yeakey; Michael Cuscurida, and Michael E. Brennan, all of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Mar. 18, 1983, Ser. No. 476,736
Int. Cl.³ C08G 18/14
U.S. Cl. 521—131 17 Claims

1. A method for making low density packaging polyurethane foam comprising reacting in the presence of a tertiary amine catalyst of polyurethane formation and a blowing agent, an organic polyisocyanate and a polyol blend comprising

a. 10 to 25 wt.% of an aromatic polyester polyol having a hydroxyl number of from 210 to 230 which is the reaction product from

(1) esterifying, in the absence of a catalyst, a residue from dibasic acid manufacture which comprises one or more acids from the group consisting of glutaric acid, succinic acid and adipic acid, with an alkylene glycol to produce a polyester polyol intermediate, and

(2) transesterifying, in the absence of a catalyst, recycled polyethylene terephthalate with the polyester polyol intermediate of the previous step,

b. 30 to 50 wt.% of a rigid amino polyol having a hydroxyl

number of from 440 to 540 which is based on sucrose or an aromatic amine polyol,

c. 5 to 25 wt.% of an organic surfactant alcohol, and

d. 25 to 35 wt.% of a polyether triol having a molecular weight of at least 4,500 and a primary hydroxyl content of greater than 75%.

4,439,552

METHOD OF PREPARING A URETHANE PREPOLYMER AND POLYMER

Richard R. Dedolph, Naperville, Ill., assignor to Gravi-Mechanics Co., Chicago, Ill.

Continuation of Ser. No. 262,204, May 8, 1981, Pat. No. 4,329,436. This application Feb. 22, 1982, Ser. No. 350,946

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—159 **4 Claims**

1. A method of forming a hydrophilic urethane prepolymer, said method comprising the steps of:

(a) adding to a polyether or polyester compound under substantially anhydrous conditions a stoichiometric excess of compound containing at least two active isocyanate groups per molecule to form a reaction mixture and initiate an exothermic condensation reaction between said polyether or polyester compound and said isocyanate compound, the temperature of said reactants being such that the temperature of said reaction mixture after addition of isocyanate is greater than about 120° C.;

(b) allowing said reaction to proceed in order to form a hydrophilic urethane prepolymer;

(c) observing the temperature of said reaction mixture as said reaction proceeds; and

(d) adding to said reaction mixture additional anhydrous polyether or polyester compound when said reaction mixture temperature exceeds a predetermined maximum value, whereby said reaction is quenched.

4,439,553

HIGH MOLECULAR WEIGHT AROMATIC AMINE SCAVENGERS AND METHOD OF USE

James L. Guthrie, Ashton, and Clifton L. Kehr, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,434

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—159 **12 Claims**

1. A process for scavenging aromatic amines from polyurethane foams produced from aromatic polyisocyanates which comprises adding a scavenger consisting essentially of at least one polyol end-capped with an aliphatic polyisocyanate.

4,439,554

DIOXO-PIPERIDINE SUBSTITUTED TERTIARY AROMATIC AMINE ACCELERATORS IN ACRYLIC RESIN

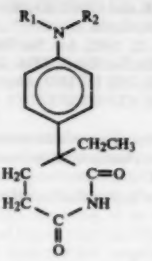
Harold Argentar, Rockville, Md., assignor to American Dental Association Health Foundation, Chicago, Ill.

Division of Ser. No. 166,383, Jul. 7, 1980, which is a division of Ser. No. 885,275, Mar. 10, 1978, Pat. No. 4,243,763. This application Jun. 11, 1982, Ser. No. 387,592

Int. Cl.³ B01J *27/24*; C08F *2/00, 4/00*; C07D *211/40*

U.S. Cl. 523—115 **16 Claims**

1. Tertiary aromatic amine accelerators for acrylic resins having the following structure:

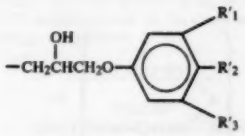


(A)

where R_1 and R_2 are the same or different and are selected from the following groups:

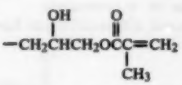
(a) $-CH_3$,

(b) $-CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,

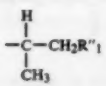


(c)

where R_1', R_2' and R_3' are each either hydrogen, normal alkyl, $-C_nH_{2n+1}$, with n varying between 1 and 20, or t-butyl, but if one R' is t-butyl, then the adjacent R' is hydrogen,



(d)



(e)

where R_1'' is $-C_nH_{2n+1}$ with n varying from 0 to 17, or

(f) $-CH_2CH_2OH$; or

(B) a polymeric amine having 10 or fewer amine units which is the reaction product of the amine (A) in which R_1 and R_2 are each hydrogen with the diglycidyl ether of bisphenol A, or the hydrolysis product of this polymeric amine; or

(C) a polymeric amine having a chain of type (B) but having terminal amine groups or type (A), where R_1 or R_2 for these terminal groups is as defined in (A); or

(D) a polymeric amine having 10 or fewer amine units which is the reaction product of the amine (B) with methacrylic or acrylic acid.

8. A restorative dental material comprising a polymerizable resin selected from the group consisting of an acrylate ester, a methacrylate ester and an unsaturated polyester; a peroxide catalyst; and a tertiary aromatic amine as in claim 1.

4,439,555

ANTIFOULING COMPOSITION

Hiroshi Doi, Takarazuka; Osamu Kadota, Toyonaka, and Susumu Kohno, Machida, all of Japan, assignors to Nippon Oil and Fats Co., Ltd. and Denki Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,721

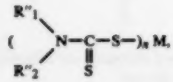
Claims priority, application Japan, Mar. 23, 1981, 56-41903; Mar. 24, 1981, 56-42842; Jul. 16, 1981, 56-110080

Int. Cl.³ C08K 5/57

U.S. Cl. 523—122 10 Claims

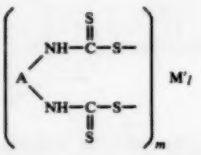
1. An antifouling composition which comprises a mixture of (A) one or more dithiocarbamic acid derivatives selected from the group consisting of

(1) a dithiocarbamate having the formula



wherein R_1'' and R_2'' are the same or different and are selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, phenyl, morpholinyl and piperazinyl, M is Zn, Ni, Mn, Cu, Co, Pb, Fe, Sn, Ag or Hg, and n is the valence of M,

(2) a metal salt of dithiocarbamic acid having the formula



wherein A is ethylene, propylene or butylene, M' is Zn, Ni, Mn, Cu, Co, Pb, Fe, Sn and Hg, and m and l are integers as follows:

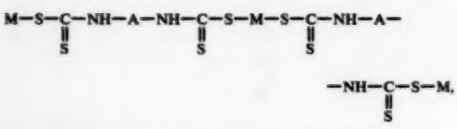
m is 1 and l is 2 when M' is monovalent,

m is 1 and l is 1 when M' is divalent,

m is 3 and l is 2 when M' is trivalent, and

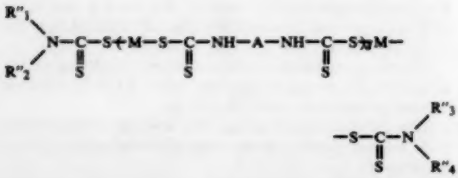
m is 2 and l is 1 when M' is tetravalent:

(3) a polymer of metal dithiocarbamate having the formula of



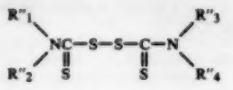
wherein M and A have the same meanings as defined above,

(4) metal salts of dithiocarbamic acid having the formula



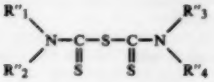
wherein R_3'' and R_4'' are the same or different and are selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, phenyl, morpholinyl and piperazinyl, a is an integer of 1 to 10 and M, A, R_1'' and R_2'' have the same meanings as defined above,

(5) thiuram disulfides having the formula

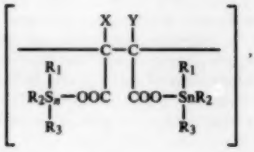


wherein R_1'', R_2'', R_3'' and R_4'' have the same meanings as defined above, and

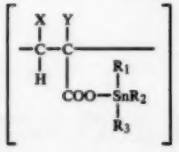
(6) thiuram monosulfides having the formula



wherein R_1'', R_2'', R_3'' and R_4'' have the same meanings as defined above, (B) one or more organotin compounds selected from the group consisting of polymers having recurring, first structural units of the formula



copolymers of monomers having said first structural unit and an acrylic or vinyl monomer, polymers having recurring second structural units of the formula,



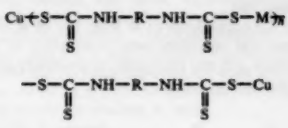
copolymers of monomers having said second structural unit and an acrylic or vinyl monomer, organotin compounds having the formula

and organotin compounds having the formula

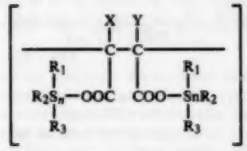
wherein R_1, R_2 and R_3 are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, X and Y are hydrogen or methyl, R_1', R_2' and R_3' are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, Z is halogen, ester group, acyl group, a monovalent functional group containing sulfur, a monovalent functional group containing oxygen or an acyl group which is partially

substituted by a halogen; and W is a divalent functional group containing oxygen or sulfur.

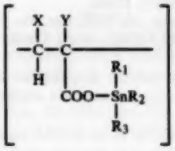
2. An antifouling composition which comprises a mixture of (A) one or more compounds having the formula



wherein R is alkylene having 2 to 6 carbon atoms, M is metal having a valence of 2 or more, and n is zero or an integer of one or more, (B) one or more organotin compounds selected from the group consisting of polymers having recurring, first structural units of the formula

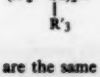


copolymers of monomers having said first structural unit and an acrylic or vinyl monomer, polymers having recurring second structural units of the formula,



copolymers of monomers having said second structural unit and an acrylic or vinyl monomer, organotin compounds having the formula

and organotin compounds having the formula



wherein R_1, R_2 and R_3 are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, X and Y are hydrogen or methyl, R_1', R_2' and R_3' are the same or different and are selected from the group consisting of alkyl, phenyl and cycloalkyl, Z is halogen, ester group, acyl group, a monovalent functional group containing sulfur, a monovalent functional group containing oxygen or an acyl group which is partially substituted by a halogen; and W is a divalent functional group containing oxygen or sulfur.

4,439,556

AQUEOUS, ADHESIVE COATING COMPOSITION WITH A NON-SELFCROSSLINKABLE ELASTOMER FOR USE WITH FILAMENTARY MATERIALS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 238,725, Feb. 27, 1981, Pat. No. 4,405,746. This application Sep. 29, 1982, Ser. No. 426,587

Int. Cl.³ C08L 61/12; C08K 7/10

U.S. Cl. 523—206 **16 Claims**

1. An elastomeric matrix material reinforced with filamentary material coated with the dried residue of an aqueous adhesive coating composition, comprising:

A. A vinyl-pyridine-containing elastomeric latex selected from the group consisting of an elastomeric copolymer latex produced from a vinyl pyridine-containing monomer and 1,3-diene hydrocarbon monomer and an elastomeric terpolymer latex produced from vinyl pyridine-containing monomer, 1,3-diene hydrocarbon monomer and a vinyl-containing monomer,

B. phenolic aldehyde condensate polymer,

C. non-self-crosslinkable elastomeric latex having a gel content of less than 40% and an average particle size of less than around 2000 angstroms present in the coating composition in a predominant amount over the amount of the vinyl pyridine-containing copolymer or terpolymer,

D. carboxylated butadiene polymer or carboxylated butadiene-styrene copolymer present in the amount of about 0.5 to about 3 weight percent of the dried solids of the aqueous coating composition,

E. and water.

4,439,557

COATING COMPOSITIONS

Hiroshi Kawamura, Kusatsu, and Giro Mibae, Otsu, both of Japan, assignors to Toray Industries, Incorporated, Japan

Filed May 6, 1982, Ser. No. 375,655

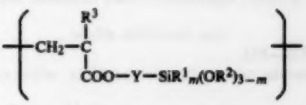
Claims priority, application Japan, May 8, 1981, 56-68351; May 8, 1981, 56-68352; May 8, 1981, 56-68353

Int. Cl.³ C08K 3/36

U.S. Cl. 523—216 **13 Claims**

1. A coating composition comprising:

A. an acrylic polymer having a repeating unit represented by



wherein R^1 is a methyl or ethyl group, R^2 is an alkyl, alkoxyalkyl or acyl group having not more than 4 carbon atoms, R^3 is hydrogen or a methyl group, Y is a divalent aliphatic radical having 2 to 10 carbon atoms and m is 0, 1 or 2;

B. fine particles of silica having an average diameter of particles in the range of 1 to 200 nm; and

C. a curing catalyst.

4,439,558

AQUEOUS PEROXIDE EMULSION FOR USE WITH GLASS FIBERS

Albert E. Tamosauskas, Pittsburgh, and Chester S. Temple, McKees Rocks, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 136,645, Apr. 2, 1980, Pat. No. 4,391,876. This application Feb. 16, 1982, Ser. No. 349,124

Int. Cl.³ C08K 3/40; C08L 91/06; B32B 17/10, 9/00

U.S. Cl. 523—217 **4 Claims**

1. Polymers reinforced with sized glass fibers having the

dried residue of an aqueous sizing composition, comprising: a film former present in an amount of about 0.5 to 12 weight percent of the aqueous sizing composition, and an aqueous emulsion of peroxide which when subjected to temperatures to decompose the peroxide to free radicals allows for binding of the sized glass fiber strand to the polymer, where the aqueous peroxide emulsion is present in an amount to give an amount of active organic peroxide in the aqueous sizing composition in the range of about 0.1 to about 6 weight percent of the aqueous sizing composition and wherein the aqueous peroxide emulsion has:

(a) at least 1 to about 60 percent by weight of said liquid organic peroxide that is liquid at 20° C. selected from the group consisting of hydroperoxides, α-oxy and α-peroxy hydroperoxides, dialkyl peroxides, aldehyde and ketone peroxides, diacyl peroxides, peroxyesters, peroxy acids, peroxydicarbonates, peroxymonocarbonate and perketals and has a half-life exceeding 60 hours at 212° F. (100° C.) and 20 minutes at 300° F. (149° C.),

(b) about 1 to about 15 weight percent of a nonionic emulsifier blend having three emulsifiers selected from the group consisting of polyalkylene glycol ethers, dialkylarylpolyether alcohols, and polyoxypropylene-polyoxyethylene condensates, phenoxypolyethoxyethanols, polyethylene derivatives of fatty acids, partial esters of sorbitol anhydrides; ethoxylated alcohols, fatty acids, fatty esters and oils, alkylphenols; glycerol esters, sucrose esters and derivatives, monoglycerides and derivatives, and sorbitan derivatives, polyethoxy phenols, alkyl polyether alcohols, ethylene oxide alkylated phenol condensation products, and mixtures thereof wherein one emulsifier has an HLB in the range of about 6 to about 12 and one emulsifier has an HLB in the range of about 9 to 15 and one emulsifier has an HLB in the range of about 12 to about 20 each in proportions to give an overall HLB level for the emulsifier system in the range of about 9 to about 20, and

(c) water in an amount of at least about 35 weight percent of the emulsion.

4,439,559

MOULDING COMPOSITIONS

Trevor R. Osborne, Wellingborough, England, assignor to Scott Bader Company Limited, Northamptonshire, England

Filed Sep. 23, 1982, Ser. No. 422,144

Claims priority, application United Kingdom, Sep. 25, 1981, 8129029

Int. Cl.³ C08L 67/06

U.S. Cl. 523—513 **9 Claims**

1. A granular composition for moulding, which composition contains

(a) an unsaturated polyester resin, 25–55 mole % of the acid component of which is a symmetrical aromatic saturated dicarboxylic acid and the glycol component of which is 1,6-hexanediol,

(b) a monomer which is selected from monomers which are solids and liquids of low volatility,

(c) at least one inorganic filler, and

(d) reinforcing fibres.

4,439,560

COATING COMPOSITION

Naomitsu Takashina, Yokohama; Masahiro Shimoi, Hiratsuka, and Yoshinori Iwamoto, Odawara, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,800

Claims priority, application Japan, Aug. 22, 1980, 55/115492

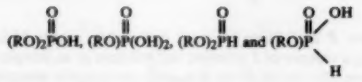
Int. Cl.³ C08K 5/05

U.S. Cl. 523—437 **5 Claims**

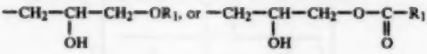
1. An ambient temperature curing coating composition which consist essentially of a solution of (1) components reactive with each other to form a film upon curing at ambient temperature and (2) a solvent; said film-forming components (1) being:

(a) copolymers having pendant epoxy groups prepared by copolymerization of 2 to 60% by weight, on the basis of total monomer, of glycidyl acrylate or methacrylate or allylglycidyl ether with at least one other polymerizable monomer, and

(b) 0.1 to 3.0 equivalents of at least one of acid phosphate ester and acid phosphite ester represented by the following formula, per one equivalent of the epozy groups of the copolymers,



[R is an alkyl group having 3 to 18 carbon atoms, or an aryl group, or substituted aryl group, methacryloyl or acryloyl, $-C_2H_4Cl$,



(R_1 is an alkyl group having 1 to 15 carbon atoms, or aryl group)] and, said solvent (2) being:

(c) at least 5% by weight, on the basis of the solvent (2), of an alcoholic solvent, and

(d) at least one other organic solvent.

4,439,561

SEALANT COMPOSITION AND METHOD

Alan G. Barber, Woodbury, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 24, 1982, Ser. No. 361,546

Int. Cl.³ C08L 99/00; C09K 3/12

U.S. Cl. 524—13 **42 Claims**

1. A composition for the stopping of liquid leaks in heat exchange systems which comprises a suspension in a liquid medium of:

(a) particulate material in an amount and of a size sufficient to become entrained in the leak, and

(b) fibrillated fiber coacting with the particulate material to seal the leak by an entwining action.

4,439,562

POLYMERIC MATERIAL MASS-DYED WITH CERTAIN METALIZED BIS-AZOMETHINE DYESTUFFS

Hans Bohler, Rheinfelden, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

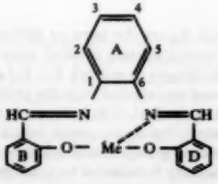
Filed Aug. 16, 1982, Ser. No. 408,190

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1981, 3133680

Int. Cl.³ C08K 5/23, 5/56; C08J 3/20; C09B 55/00

U.S. Cl. 524—90 **27 Claims**

1. Mass-dyed polymeric material having dissolved therein, as dyestuff, a compound or a mixture of compounds of formula I



I

wherein

the nucleus A is unsubstituted or substituted by up to two substituents selected from cyano; halogen; nitro; methyl; ethyl; C_{1-4}alkoxy; benzoylamino; benzoylamino the phenyl ring of which is substituted by up to two substituents selected from chlorine, bromine, methyl, benzoyl, methoxy, ethoxy and nitro; C_{2-3}-acylamino; carboxy; alkoxy C_{1-4}-carbonyl; carbamoyl; alkyl C_{1-4}-carbamoyl; di(C_{1-4}alkyl)carbamoyl; phenylcarbamoyl; phenylsulphamoyl; and N-C_{1-4}alkyl-N-phenylcarbamoyl,

the nuclei B and D, independently, are each unsubstituted or substituted by up to three substituents selected from those defined above for nucleus A, and

Me is nickel or copper,

with the proviso that when the nuclei B and D are each substituted by halogen then the nucleus A is substituted in the 3- or 4-position by a substituent other than halogen or nitro.

4,439,563

WATER BASED CONCRETE CURE

John J. Sackis, Bartlett, and Paul H. Anderson, Elgin, both of Ill., assignors to W. R. Meadows, Inc., Elgin, Ill.

Filed Sep. 23, 1982, Ser. No. 421,851

Int. Cl.³ C08K 5/35

U.S. Cl. 524—96 **17 Claims**

1. A method for making a water based concrete cure comprising the steps of:

melting an aliphatic hydrocarbon resin having a melting point in the range of from about 70° C. to about 105° C., and a paraffinic wax having a combined weight by percentage of the final product of at least 13%;

mixing into the resin and wax an emulsifying agent in an amount of at least 0.96% by weight;

adding water sufficient to form an emulsion of resin and wax in the water.

4,439,564

5-MEMBERED CYCLIC PHOSPHONATES AND COMPOSITIONS THEREOF

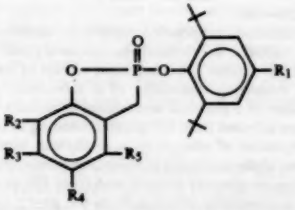
Dwight W. Chasar, Northfield, Ohio, assignor to The B. F. Goodrich Co., Akron, Ohio

Filed Sep. 29, 1982, Ser. No. 427,362

Int. Cl.³ C07F 9/28; C08K 5/53

U.S. Cl. 524—101 **29 Claims**

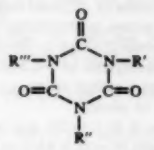
21. A composition comprising organic materials subject to degradation and stabilizing amounts of (1) 2-[alkylphenoxy]-2,3-dihydro-1,2-benzoxaphosphole 2-oxide cyclic phosphonates of the formula:



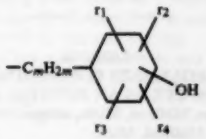
wherein:

is t-butyl; R_1 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, halogen, an alkoxy radical containing 1 to 8 carbon atoms, phenyl, a $—CH_2CH_2COOR_6$ group wherein R_6 is an alkyl radical containing 1 to 8 carbon atoms, or a t-alkyl radical containing 4 to 8 carbon atoms; R_2 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, and methoxy or phenyl when R_3, R_4 and R_5 are hydrogen, or when R_3 and R_4 are hydrogen and R_5 is methyl; R_3 is methyl when R_4 is methyl or hydrogen and R_2 and R_5 are hydrogen; R_4 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms, a t-alkyl radical containing 4 to 8 carbon atoms, methoxy, phenyl, halogen or methoxycarbonyl, when R_2 is hydrogen, an alkyl radical containing 1 to 8 carbon atoms, a cycloalkyl radical containing 3 to 6 carbon atoms and a t-alkyl radical containing 4 to 8 carbon atoms, and R_3 and R_5 are hydrogen; R_5 is methyl when R_2, R_3 and R_4 are hydrogen, or when R_4 is methyl and R_2 and R_3 are hydrogen, and hydrogen when R_2, R_3, R_4 are the same as above;

and when R_4 and R_5 are $(—CH=CR_7—CH=CH—)$, R_7 is hydrogen or t-butyl, and R_2 is t-butyl or hydrogen and R_3 is hydrogen; and when R_2 and R_3 are $(—CH=CH—)_2$, R_4 and R_5 are hydrogen, and (2) a hydroxyphenylalkyleneyl isocyanurate of the formula



wherein R′ is a hydroxyphenylalkyleneyl radical of the formula



where m is 1 to 4, r_1 is an alkyl radical having 1 to 18 carbon atoms and is positioned immediately adjacent to the hydroxy group on the ring; r_2, r_3, and r_4 are hydrogen or an alkyl radical containing 1 to 18 carbon atoms; and R″ and R‴ are hydrogen, an alkyl radical containing 1 to 18 carbon atoms, or are the same as R′.

4,439,565

OLIGOMERIC ESTERAMIDES CONTAINING PENDANT HINDERED AMINE GROUPS

Roland A. E. Winter, Armonk; Roger F. Malherbe, Yonkers, both of N.Y., and Frank Tieh-Yin Fu, Taipei, Taiwan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

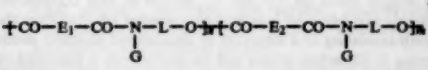
Filed Nov. 10, 1982, Ser. No. 440,490

Int. Cl.³ C07D 401/12, 401/14; C08K 5/34

U.S. Cl. 524—103 **23 Claims**

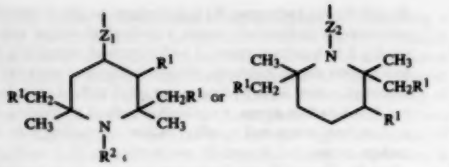
1. An oligomeric esteramide having recurring structural units, jointed in essentially a random fashion, of the formula (A)

(A)



wherein

G is a hindered amine radical of formula I or II



(I) (II)

in which R^1 is hydrogen or alkyl having 1 to 4 carbon atoms, R^2 is hydrogen, alkyl having 1 to 12 carbon atoms, allyl, benzyl, acetyl, acryloyl or cyano, Z_1 is a direct bond, $-NHCH_2CH_2-$, $-NHCH_2CH_2CH_2-$ or $-OCH_2CH_2-$, with the heteroatom attached to the piperidyl ring, Z_2 is ethylene or trimethylene,

E_1 and E_2 are the same or different and are alkylene having 2 to 12 carbon atoms, o-phenylene, m-phenylene, p-phenylene, 5-norbornen-2,3-diyl or vinylene,

L is ethylene, trimethylene or $-CH_2CHR^3-$ where R^3 is alkyl having 1 to 6 carbon atoms, cycloalkyl having 5 or 6 carbon atoms or phenyl,

the sum of n plus m is 2 to 50, and when E_1 and E_2 are different, the ratio of n/m is 49/1 to 1/49.

19. A method of stabilizing an organic material subject to light-induced deterioration which comprises incorporating in said material from 0.05 to 5% by weight of said material of an esteramide according to claim 1.

4,439,566

CARBONATE POLYMERS CONTAINING A SALT OF A CROWN COMPLEX AS AN IGNITION DEPRESSANT

Lowell S. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1982, Ser. No. 369,050

Int. Cl.³ C08K 5/15

U.S. Cl. 524—108 **6 Claims**

1. A composition comprising a carbonate polymer having dispersed therein a thermally stable crown salt having a cation that is a complex of an alkali metal or alkaline earth metal ion and a crown compound in an amount sufficient to retard combustion when the composition is exposed to a low temperature ignition source.

4,439,567

PROCESS FOR INJECTION MOLDING POLYOLEFIN RESIN COMPOSITIONS

Takeo Inoue; Jun Otsu; Tateyo Sasaki; Hiroyuki Doi, and Keigo Suehiro, all of Hiroshima, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Hiroshima, Japan

Continuation of Ser. No. 280,000, filed as PCT JP79/00290, Nov. 14, 1979, published as WO81/01410, May 28, 1981 §102(e) dated Jul. 2, 1981, abandoned. This application Jul. 8, 1982, Ser. No. 396,202

Int. Cl.³ C08K 5/15

U.S. Cl. 524—108 **3 Claims**

1. A process for producing injection molded polyolefin products of good transparency without foaming or blistering which comprises forming a polyolefin resin composition by adding to a polyolefin a condensate of sorbitol with an aldehyde compound and a lubricant in an amount of 1/20–½ parts by weight based on 1.0 part by weight of said condensate, wherein said lubricant is at least one member selected from the group consisting of a saturated or unsaturated aliphatic amide having 3–30 carbon atoms and its derivatives, a saturated or unsaturated aliphatic monocarboxylic acid ester having 3–30 carbon atoms, and a silicone compound, and injection molding said polyolefin resin composition.

4,439,568

FABRICATION OF COMPOSITE ARTICLES

Ben R. Bogner, Wheaton, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 6, 1981, Ser. No. 318,958

Int. Cl.³ C08K 5/15

U.S. Cl. 524—111 **4 Claims**

1. A binder composition comprising a resinous furan binder selected from the group consisting of furfuryl alcohol homopolymer resins, furfuryl alcohol-formaldehyde resins, furfuryl alcohol-furfural-formaldehyde resins, furfuryl alcohol-phenol resins, furfuryl alcohol-urea-formaldehyde resins and furfuryl alcohol-urea-phenol resins diluted with 5-hydroxymethylfurfural in an amount of about 5 to 25% by weight of the binder composition.

4,439,569

POLYMERIC THERMO-SENSITIVE MATERIAL

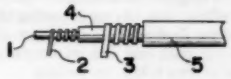
Shu Hotta, Katano; Yoshio Kishimoto, Hirakata, and Wataru Shimotsuma, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 202,179, Oct. 28, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,577

Claims priority, application Japan, Oct. 30, 1979, 54-140950; Nov. 13, 1979, 54-147298; Mar. 25, 1980, 55-38454

Int. Cl.³ C08K 5/51, 5/53, 3/30

U.S. Cl. 524—128 **4 Claims**



1. A thermosensitive polyamide composition comprising a polyamide, at least one bis(hydroxyphenyl) sulfide and at least one secondary or tertiary thiophosphorous acid ester,

said bis(hydroxyphenyl) sulfide and said thiophosphorous acid ester, each being employed in the amount of 0.1 to 10 weight parts per 100 weight parts of polyamide.

4,439,570

PHENOLIC ANTIOXIDANT COMPOSITIONS FOR ORGANIC POLYMERS

Giuseppe Messina, Alghero; Loreno Lorenzoni, Porto Torres, and Antonio L. Fadda, Sassari, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Sep. 27, 1982, Ser. No. 424,766

Claims priority, application Italy, Oct. 20, 1981, 24576 A/81

Int. Cl.³ C08K 5/50

U.S. Cl. 524—154 **5 Claims**

1. Heat resistant composition suitable for stabilizing styrene-butadiene rubbers, acrylonitrile-butadiene-styrene rubbers or polybutadiene against the deleterious effects of oxygen, light and heat, consisting essentially of a substantially-colourless liquid mixture of a phenolic antioxidant or mixture of phenolic antioxidants selected from the group consisting of the products of the alkylation of phenol or a methylene bisphenol with isobutylene, alpha-methylstyrene, cyclopentene, diisobutylene and nonenes or mixtures thereof; and from 100 to 10,000 ppm by wt. of a phosphine selected from the group consisting of triphenylphosphine, tributylphosphine and trioctylphosphine.

4,439,571

THERMALLY STABILIZED POLYMERS

Daniel L. Dufour, Longmeadow; Alva F. Harris, Wilbraham, and John B. Ott, Greenfield, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 24, 1981, Ser. No. 305,016

Int. Cl.³ C08K 5/15, 5/04, 3/38

U.S. Cl. 524—183 **8 Claims**

1. A polymeric composition having a reduced tendency to

crosslink during fabrication, which composition comprises polymer units derived from an unsaturated nitrile and from an unsaturated dicarboxylic acid anhydride and which also comprises from 0.1 to 8.0% by weight, based on the composition weights, of a boron compound selected from the group consisting of a boron oxide, boron acids and esters of boron acids wherein the esterifying groups are selected from alkyl, aralkyl, alkaryl, aryl or alkylene groups.

4,439,572

ZINC OXIDE-ZINC SALT SMOKE SUPPRESSANT/FLAME RETARDANTS

Robert H. Kindrick, Grosse Ile, Mich., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 315,336, Oct. 26, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,723

Int. Cl.³ C08K *3/38*

U.S. Cl. 524—405 **13 Claims**

1. A method of improving the flame and smoke suppressant characteristics of halogen-containing polymeric compositions comprising polyvinyl chloride, polyvinylidine chloride, and or polyolefins with chlorinated paraffins which comprises adding to said polymeric compositions effective amounts of an inhibitor consisting essentially of a mixture of zinc oxide and zinc salt selected from the groups consisting of, zinc phosphate and zinc sulfide wherein the zinc salt range from about 5 to 50% by weight of the mixture.

4,439,573

PROPYLENE POLYMER COMPOSITION

Osamu Fukui, Toyonaka; Yoshiro Umemoto, Nagoya; Tsugumi Sanmiya, Toyota; Yutaka Sano, Kishiwada, and Kazuyoshi Tanaka, Sakai, all of Japan, assignors to UBE Industries and Toyota Jidosha Kabushiki Kaisha, both of Osaka, Japan

Filed Dec. 23, 1982, Ser. No. 452,725

Claims priority, application Japan, Dec. 25, 1981, 56-209173

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—451 **6 Claims**

1. A propylene polymer composition comprising

(A) 40% to 75% by weight of at least one crystalline ethylene-propylene block copolymer in which the content of the polymerized ethylene is in the range of from 5% to 10% by weight, in which the polypropylene component has a fraction thereof insoluble in boiling n-heptane, in an amount of 97% or more based on the weight of said polypropylene component, in which a fraction of the block copolymer soluble in p-xylene at room temperature, has an intrinsic viscosity of from 2.5 to 4 determined in decahydronaphthalene at a temperature of 135° C. and which block copolymer has a melt flow index of from 11 to 70;

(B) 20% to 40% by weight of at least one amorphous ethylene-propylene copolymer having an intrinsic viscosity of from 1.0 to 2.0 determined in decahydronaphthalene at a temperature of 135° C., and a Mooney viscosity ML_{1+4} of from 5 to 40 determined at a temperature of 100° C.; and

(C) 5% to 20% by weight of talc in the form of fine particles having an average size of from 0.1 to 5 microns.

4,439,574

PROCESS FOR THE PREPARATION OF LATTICES OF VINYLACETATE/OLEFIN COPOLYMERS

Jean-Luc Schuppiser, Claye Souilly, and Jean-Claude Daniel, Fontenay-sous-Bois, both of France, assignors to Rhone-Poulenc Specialites Chimiques, France

Filed Aug. 5, 1982, Ser. No. 405,425

Claims priority, application France, Aug. 10, 1981, 81 15437

Int. Cl.³ C08F *2/16, 2/24*

U.S. Cl. 524—458 **14 Claims**

1. A process for the preparation of a latex of a vinyl acetate-/olefin copolymer comprising the step of copolymerizing vinyl acetate with at least one olefin in aqueous emulsion, in the presence of an initiator, an emulsifier and a protective colloid, said protective colloid comprising a water-soluble polymer (a) containing at least one monomer selected from the group consisting of acrylamide, methacrylamide, substituted or unsubstituted N-alkyl derivatives of acrylamide, and substituted or unsubstituted N-alkyl derivatives of methacrylamide, and a water-soluble polymer (b) of ethylene glycol, said polymer (b) having a molecular weight between 1,000 and 50,000.

4,439,575

PROCESS FOR PREPARING AQUEOUS VARNISHES

Günther Schwarz, Münster, Fed. Rep. of Germany, assignor to BASF Farben + Fasern AG, Hamburg, Fed. Rep. of Germany

PCT No. PCT/DE82/00066, § 371 Date Sep. 27, 1982, § 102(e) Date Sep. 27, 1982, PCT Pub. No. WO82/03402, PCT Pub. Date Oct. 14, 1982

PCT Filed Mar. 24, 1982, Ser. No. 432,945

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112659

Int. Cl.³ C08L *91/08*

U.S. Cl. 524—489 **18 Claims**

1. In a process for preventing sedimentation in an aqueous varnish containing additives selected from the group consisting of mineral fillers, pigments and mixtures thereof, the improvement comprising:

(a) preparing a hot wax emulsion in water by mixing waxes having a melting point above 60° C. and a cloud point on toluene between 35° C. and 45° C. in water at a temperature between 80° C. and 100° C.; and

(b) adding said hot wax emulsion at said temperature between 80° C. and 100° C. to said aqueous varnish with vigorous stirring.

4,439,576

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickei, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 203,212, Nov. 3, 1980, and a continuation-in-part of Ser. No. 203,213, Nov. 3, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,848

Int. Cl.³ C08K *3/26*

U.S. Cl. 524—425 **17 Claims**

1. A polyurethane liquid polymer composition comprising a polyurethane oligomer, a heat activated free radical generating catalyst and at least one additional component selected from the group consisting of a reinforcing agent and a filler, said polyurethane oligomer having an equivalent ratio of NCO to OH from about 0.8/1 to about 2/1 and being prepared by reacting

(a) an organic polyisocyanate;

(b) a polyether polyol having an average equivalent weight of about 75 to about 500 and an average functionality of at least about 3; and

(c) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, hydroxyethyl acrylamide, hydroxypropyl acrylamide, and mixtures thereof;

wherein there is employed an equivalent ratio of said isocyanate reactive group-containing unsaturated monomer to said polyether polyol in the range from about 0.6/1 to about 25/1.

4,439,577

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickei, Wallingford, and Michael L. Rosin, Madison, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 203,213, Nov. 3, 1980, abandoned. This application Apr. 1, 1982, Ser. No. 364,575

Int. Cl.³ C08K 3/26

U.S. Cl. 524—425 19 Claims

1. A polyurethane liquid polymer composition comprising a polyurethane oligomer and a heat activated free radical generating catalyst, said polyurethane oligomer having an equivalent ratio of NCO to active hydrogen from about 0.5/1 to about 2/1 and being prepared by reacting

(a) an isocyanate-terminated prepolymer having a final free NCO content ranging from about 0.5% to about 30% which is the product of reacting

(1) an organic polyisocyanate with

(2) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, hydroxyethyl acrylamide, hydroxypropyl acrylamide, hydroxyethyl methacrylamide, and mixtures thereof, with

(b) a polyol reactant comprising

(1) a high functionality polyol having an average equivalent weight of from about 75 to about 500 and an average functionality of at least about 3, said high functionality polyol being prepared by reacting an alkylene oxide, or a mixture of alkylene oxides, with a polyhydric initiator comprising a carbohydrate or a carbohydrate derivative, and

(2) a chain extender having an average equivalent weight from about 31 to about 4,000 and an average functionality of about 2, said chain extender being employed in an amount ranging from about 20 to about 1,500 parts by weight per 100 parts by weight of said high functionality polyol.

4,439,578

USE OF LIQUID CRYSTAL POLYMER PARTICULATES HAVING A HIGH ASPECT RATIO IN POLYMERIC MOLDING RESINS TO SUPPRESS MELT DRIPPING

Sang N. Kim, Randolph, and John R. Kastelic, Rockaway, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,523

Int. Cl.³ C08L 67/02, 77/02, 77/06

U.S. Cl. 524—538 28 Claims

1. A thermoplastic molding composition possessing desirable resistance to melt dripping comprising a major amount of a thermoplastic polymeric molding resin selected from the group consisting of thermoplastic polyesters and thermoplastic polyamides and a minor amount of particulates comprised of a liquid crystal polymer having an aspect ratio of at least about 10:1 and a length ranging from about 30 microns to about 0.5 inch, the melting temperature of said thermoplastic polymeric molding resin being lower than the temperature at which said liquid crystal polymer will melt or degrade and the temperature at which said polymer will melt or degrade being of sufficient magnitude and said particulates being present in an amount sufficient to enhance the ability of said molding resin to resist melt dripping.

4,439,579

PREPARATION OF AQUEOUS THERMOSETTING ELECTRICAL INSULATING VARNISHES

Udo Reiter, Mutterstadt; Hans-Uwe Schenck, Wachenheim; Helmut Lehmann, Reinbek, and Ferdinand Hansch, Wedel, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,169

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121306

Int. Cl.³ C08L 79/08

U.S. Cl. 524—602 3 Claims

1. A process for the preparation of aqueous thermosetting electrical insulating varnishes which are suitable for use as wire enamels and impregnating varnishes and are based on polyester-imides which have been obtained by condensing aromatic tricarboxylic acid monoanhydrides, aromatic dicarboxylic acids or their esterifiable or transesterifiable derivatives, diamines, diols, and triols containing an isocyanurate ring, wherein hydroxyl-containing polyester-imides which have kinematic viscosities of from 16 to 30 $mm^2 \cdot s^{-1}$ (measured in a solution of 1 part of polyester-imide in 2 parts of N-methyl-pyrrolidone at 30° C.) and acid numbers of <10 are treated, at from 80° to 130° C., in the presence or absence of up to 5% by weight, based on polyester-imide, of an organic solvent, with from 5 to 15% by weight, based on polyester-imide, of ammonia in the form of an aqueous solution, thereby producing aminolysis and hydrolysis so that a neutral or slightly acidic solution results, which is diluted to a viscosity of from 100 to 10,000 mPa.s by adding demineralized water, from 0.1 to 5% by weight, based on polyester-imide, of a water-soluble curing catalyst being added, if desired, after the treatment with ammonia.

4,439,580

CATIONIC WATER-IN-OIL POLYMER EMULSIONS

Raymond J. Schaper, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1982, Ser. No. 412,338

Int. Cl.³ C08F 2/28

U.S. Cl. 524—801 8 Claims

1. A process for the production of high molecular weight water-in-oil polymer emulsions, comprising the steps of:

(a) preparing a 35 to 75 percent by weight, aqueous solution of at least one cationic monomer containing 0.5 percent, by weight, to saturation, of added salt;

(b) preparing a water-in-oil emulsion of the aqueous solution of (a) in a water-insoluble liquid containing a surfactant, said monomer concentration of the total emulsion being about 20 to 75 percent, by weight; and

(c) polymerizing said monomer emulsion at a pH of 7 to 13 in the presence of a polymerization catalyst to produce an emulsion containing a polymer with an intrinsic viscosity in 1.0 M NaCl of above 1.5 dl/g.

4,439,581

METHOD FOR THE PRODUCTION OF MICROCAPSULES

Shinsuke Irii, Nishinomiya, and Tomoharu Shiozaki, Amagasaki, both of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1982, Ser. No. 411,923

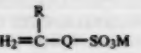
Claims priority, application Japan, Sep. 3, 1981, 56-139504; May 20, 1982, 57-87035

Int. Cl.³ C08L 75/00

U.S. Cl. 524—839 15 Claims

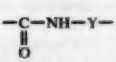
1. A method for the production of microcapsules comprising the steps of

preparing an aqueous medium dissolving at least one homopolymer or copolymer therein, said homopolymer or copolymer having at least 40% monomer units represented by the general formula:



wherein R is hydrogen or alkyl, M is ammonium, sodium, potassium, lithium or hydrogen and Q is further represented by

or



wherein Y is methylene, ethylene or polymethylene having 3 to 10 carbon atoms, which methylene, ethylene or polymethylene may be substituted by at least one alkyl,

dispersing a hydrophobic liquid in said aqueous medium to form an emulsion system including microscopic emulsion droplets of said hydrophobic liquid, said hydrophobic liquid including at least one polyvalent isocyanate therein, and

causing interfacial polymerization of said polyvalent isocyanate in said emulsion system to form synthetic microcapsule walls comprising polyurea bonding around said droplets of said hydrophobic liquid.

4,439,582

BLENDS OF AROMATIC POLYCARBONATE WITH RANDOM COPOLYMERS OF A MONOVINYLIDENE AROMATIC AND AN UNSATURATED CARBOXYLIC ACID

David E. Henton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 223,606, Jan. 9, 1981, abandoned. This application Mar. 3, 1982, Ser. No. 354,477

Int. Cl.³ C08L *51/04, 69/00*

U.S. Cl. 525—67 10 Claims

1. A heterogeneous blend comprising the following components: (1) a polycarbonate of a dihydric phenol blended with (2) an acid copolymer of a monovinylidene aromatic monomer and an α, β-ethylenically unsaturated carboxylic acid, said components being present in proportions such that the blend has (a) a Gardner Dart impact strength of at least about 100 inch-pounds, (b) a notched Izod impact strength of at least about 3 foot-pounds/inch of notch, (c) a heat resistance of at least about 210° F. as determined by ASTM D-648 (unannealed at 66 pounds per square inch) and (d) a processability (injection pressure) less than about 9000 pounds per square inch at a mold fill time of 3.0 seconds as determined by the test procedure for Injection Pressure set forth in footnote (10) of Table I hereof.

4,439,583

POLYURETHANE DIACRYLATE COMPOSITIONS USEFUL IN FORMING CANULAE

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558. This application Sep. 1, 1982, Ser. No. 413,944

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.³ C08F *8/30;* C08L *75/00*

U.S. Cl. 525—127 19 Claims

1. A canula, the walls of which are formed of a hydrophilic polyurethane diacrylate composition, which will form a hydrogel upon immersion in water and is permeable to gases, ions and other low molecular weight species, which composition is dimensionally stable and exhibits memory, said polyurethane diacrylate composition comprising from about 90 to about 65 weight percent of a hydrophilic polyurethane resin characterized by terminal hydroxyl groups and from about 10 to about 35 weight percent of a diacrylate.

4,439,584

GAS AND ION PERMEABLE MEMBRANES FORMED OF POLYURETHANE DIACRYLATE COMPOSITIONS

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558. This application Sep. 1, 1982, Ser. No. 413,943

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.³ C08F *8/30;* C08L *75/00*

U.S. Cl. 525—127 19 Claims

1. A burn dressing comprising a hydrophylic polyurethane diacrylate composition which will form a hydrogel upon immersion in water and is permeable to gases, ions and other low molecular weight species, which composition is dimensionally stable and exhibits memory, and said polyurethane diacrylate composition comprising from about 90 to about 65 weight percent of a hydrophilic polyurethane resin characterized by terminal hydroxyl groups and from about 10 to about 35 weight percent of a diacrylate.

4,439,585

POLYURETHANE DIACRYLATE COMPOSITIONS AS CARRIER FOR PHARMACOLOGICAL AGENTS

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558. This application Sep. 2, 1982, Ser. No. 414,273

The portion of the term of this patent subsequent to Jan. 3, 2001, has been disclaimed.

Int. Cl.³ C08F *8/30;* C08L *75/00*

U.S. Cl. 525—127 18 Claims

1. An oral delivery system comprising a pharmacologically active agent and as a carrier vehicle therefor a hydrophylic polyurethane diacrylate composition which will form a hydrogel upon immersion in water and is permeable to gases, ions and other low molecular weight species, which composition is dimensionally stable and exhibits memory, said polyurethane diacrylate composition comprising from about 90 to about 65 weight percent of a hydrophilic polyurethane resin characterized by terminal hydroxyl groups and from about 10 to about 35 weight percent of a diacrylate.

4,439,586

PROCESS FOR PREPARING POLYARYLATES

James H. Kawakami, Piscataway; Benito See, Belle Mead; Thomas R. Jones, Lebanon, and Louis M. Maresca, Belle Mead, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1982, Ser. No. 393,556

Int. Cl.³ C08G *63/18, 63/66*

U.S. Cl. 525—169 24 Claims

1. An improved process for preparing a polyarylate having a reduced viscosity of from about 0.1 to greater than 1.0 dl/g which process comprises the following steps:

(a) reacting an acid anhydride derived from an acid containing from 2 to 8 carbon atoms with at least one dihydric phenol to form the corresponding diester; and

(b) reacting said diester with at least one aromatic dicarboxylic acid at a temperature sufficient to form the polyarylate, wherein the improvement comprises carrying out said process in the presence of from about 0.2 to about 2.0 weight percent, based on the weight of the reaction mix-

ture of an adsorbent selected from silica gel, activated charcoal or a molecular sieve.

4,439,587

WATER DISPERSIBLE ACRYLIC MODIFIED CHLORINATED RUBBER

Carlos J. Martinez, Edison, and Albert C. Chen, E. Brunswick, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 8, 1982, Ser. No. 355,434
Int. Cl.³ C08F 259/02
U.S. Cl. 525—292 **3 Claims**

1. A graft copolymer of at least one acrylic monomer or of at least one acrylic monomer and other monomers copolymerizable therewith, and chlorinated natural rubber or chlorinated synthetic rubber, in which at least about 8 percent of the total weight of said graft copolymer is derived from acrylic acid, methacrylic acid, or both.

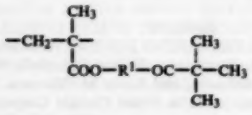
4,439,588

POLYMERS OF PIVALOYLOXYALKYL METHACRYLATES, METHOD FOR THEIR PREPARATION AND MODIFICATION

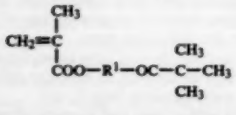
Stanislav Sevcik; Jiri Trekoval; Jan Holata, and Jiri Stamberg, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved., Prague, Czechoslovakia

Division of Ser. No. 89,628, Oct. 29, 1979, Pat. No. 4,267,287, which is a division of Ser. No. 944,392, Sep. 21, 1978, Pat. No. 4,218,552, which is a division of Ser. No. 783,398, Mar. 31, 1977, Pat. No. 4,130,705, which is a continuation-in-part of Ser. No. 590,635, Jun. 26, 1975, abandoned. This application Nov. 6, 1980, Ser. No. 204,615
Claims priority, application Czechoslovakia, Jun. 27, 1974, 4540-74; Jun. 27, 1974, 4541-74; Jun. 27, 1974, 4542-74
Int. Cl.³ C08F 8/12
U.S. Cl. 525—366 **11 Claims**

1. A method for modification of pivaloyloxyalkyl methacrylate polymer containing structural units having the general formula:



and being prepared by polymerizing a pivaloyloxyalkyl methacrylate having the general formula



where R^1 is $(CH_2)_{n1}$—O or $(CH_2CH_2—O)_{n2}$, n_1 being 2 to 10 and n_2 being 1 to 4, to produce stereoregular or atactic polymers comprising at least partially removing the protective ester —OCC$(CH_3)_3$ groups by a selective chemical reaction.

4,439,589

PROCESS FOR THE PREPARATION OF COPOLYMERS OF STYRENE AND/OR ITS DERIVATIVES

Heinrich Alberts, Cologne; Rüdiger Schubart, Bergisch-Gladbach, and Alfred Pischtschan, Kuerten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 243,612, Mar. 13, 1981, abandoned. This application Jan. 24, 1983, Ser. No. 460,489
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010347
Int. Cl.³ C08F 212/10; C08K 5/06
U.S. Cl. 526—209 **6 Claims**

1. A process for the preparation of a copolymer of styrene and/or a derivative thereof by polymerization of

(a) 95–20% by weight of at least one aromatic monovinyl compound,

(b) 5–80% by weight of at least one member selected from the group consisting of acrylonitrile and methacrylonitrile, and

(c) 0–75% by weight, based on the combined weight of (a) and (b), of at least one member selected from the group consisting of C_1–C_{20}-alkyl esters of acrylic and methacrylic acid, the sum of

(a), (b) and (c) being 100% by weight, wherein polymerization is carried out in the presence of 0.01 to 10% by weight, based on the total quantity of monomers of at least one enol ether derived from an aliphatic of cycloaliphatic aldehyde or ketone.

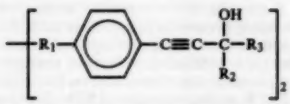
4,439,590

ACETYLENE-TERMINATED AROMATIC ENYNE RESINS AND METHOD OF PRODUCTION THEREOF

Harry T. Hanson, Millburn, N.J., assignor to Celanese Corporation, New York, N.Y.

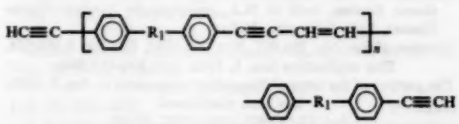
Filed Apr. 19, 1982, Ser. No. 369,393
Int. Cl.³ C08F 138/00
U.S. Cl. 526—285 **16 Claims**

1. A method for producing a poly-aromatic ethynyl-terminated enyne compound, comprising heating in the presence of a strong base a compound having a structure:



wherein R_1 is —SO_2— or —CO—, and wherein R_2 and R_3 can be the same or different and are selected from the group consisting of hydrogen and lower alkyl groups having from one to four carbon atoms, phenyl, and substituted phenyl, and wherein R_2 and R_3 can form a saturated five or six membered ring.

14. A compound having the structure:



wherein R_1 is a member selected from the group consisting of —SO_2— and —CO—; and wherein n is 1 to 10.

16. The thermoset resin comprised of a cured product of the compound of claims 14 or 15.

4,439,591

PROCESS FOR THE PRODUCTION OF BLOCKED COMPOUNDS OPTIONALLY CONTAINING FREE HYDROXYL GROUPS AND THEIR USE FOR THE PRODUCTION OF POLYURETHANES

Hans-Ulrich Buschhaus, Cologne; Kurt Findeisen, Odenthal; Hans-Joachim Traenckner, and Wolfgang Beer, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

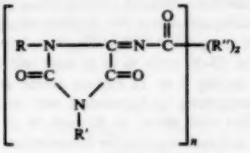
Filed Apr. 25, 1983, Ser. No. 488,493

Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217387

Int. Cl.³ C08G 18/64; C07D 235/30

U.S. Cl. 528—73 6 Claims

1. A process for the production of compounds containing reversibly blocked and, optionally, free alcoholic hydroxyl groups, characterized in that organic compounds containing at least one alcoholic hydroxyl group, but being otherwise inert under the reaction conditions are reacted at about 0° to 140° C. with N,N'-disubstituted 5-acylimino-imidazolidine diones corresponding to the following general formula



in which

R and R' may be the same or different and represent an optionally halogen-, C_1–C_4-alkyl, methoxy-, nitro-, C_1–C_4-alkoxy- or nitrile-group-substituted aliphatic C_1–C_{20} hydrocarbon radical, cycloaliphatic C_3–C_{15} hydrocarbon radical, aromatic C_6–C_{15} hydrocarbon radical or araliphatic C_7–C_{15} hydrocarbon radical,

R'' represents an n-functional aliphatic C_2–C_{20} hydrocarbon radical, cycloaliphatic C_3–C_{15} hydrocarbon radical, aromatic C_6–C_{15} hydrocarbon radical, araliphatic C_7–C_{15} hydrocarbon radical optionally containing inert substituents, a C_1–C_4 alkoxy radical optionally containing inert substituents, a phenoxy radical or a radical of the type obtained by removal of the chlorocarbonyl groups from an n-functional organic carbamic acid chloride containing a total of 2 to 10 carbon atoms,

n=an integer of from 1 to 3 and

z=0 or 1.

6. A process for the production of a polyurethane which comprises

(a) preparing a compound containing at least two partially blocked hydroxyl groups according to the process of claim 3,

(b) mixing the compounds prepared in (a) with an organic polyisocyanate and

(c) heating the mixture formed in (b) to a temperature in excess of 140° C.

4,439,592

PREPARATION OF POLYDIORGANOSILOXANES HAVING TERMINAL TRIORGANOSILYL GROUPS

Günther Maass, Bergisch-Gladbach; Hans J. Lücking, Leverkusen; Karl Brändle, Bergisch-Gladbach, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1982, Ser. No. 417,720

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1981, 3139316

Int. Cl.³ C08G 77/06

U.S. Cl. 528—14 6 Claims

1. In the preparation of a triorganosilyl-terminated polydiorganosiloxane by the polymerization at elevated temperature of a cyclic diorganopolysiloxane with a triorganosilyl-terminated siloxane chain length regulator in the presence of a basic catalyst, the improvement which comprises, before polymerization, distilling off a part of the cyclic diorganosiloxane in the presence of the polymerization catalyst at a temperature which is at least 10° C. below the temperature at which polymerization commences.

4,439,593

POLYURETHANE COMPOSITIONS WITH IMPROVED STORAGE STABILITY

Robert G. Kelso, Wexford; Meena S. Ahuja, Pittsburgh, both of Pa., and Peter D. Schmitt, Glen Dale, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed May 26, 1983, Ser. No. 498,225

Int. Cl.³ C08G 18/80, 18/32, 18/42

U.S. Cl. 528—45 21 Claims

1. A process for improving the storage stability of a composition containing

(a) a blocked polyisocyanate component prepared by blocking the isocyanate groups of an organic polyisocyanate with a blocking agent comprising a di-C_1—C_{12}—alkyl and/or —alkoxyalkyl malonate and

(b) a component comprising a compound containing at least two isocyanate-reactive hydrogens, which comprises incorporating a stabilizing amount of a compound having monofunctional reactivity towards isocyanate groups into said composition by adding said compound to component (a), component (b) or to the mixture of components (a) or (b).

4,439,594

CURABLE EPOXY RESIN COMPOSITIONS

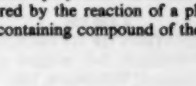
William A. Higgins, Gates Mills, and Alan C. Clark, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Sep. 17, 1982, Ser. No. 420,171

Int. Cl.³ C08G 59/68, 59/40

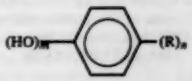
U.S. Cl. 528—89 44 Claims

1. A curable epoxy resin composition comprising a mixture of an epoxy resin and a polyvalent metal salt of a phosphorodithioic acid prepared by the reaction of a phosphorus sulfide with a hydroxyl containing compound of the general formula



wherein R is hydrogen or a hydrocarbon-based substituent containing from about 1 to about 100 carbon atoms; m is an integer ranging from 1 to about 3 and n is an integer ranging from 1 to about 5 with the proviso that the sum of m+n does not exceed 6.

7. A curable epoxy resin composition comprising an epoxy resin, and a reaction product of (A) a polyvalent metal salt of a phosphorodithioic acid prepared by the reaction of a phosphorus sulfide with a hydroxyl containing compound corresponding to the general formula



wherein R is a hydrogen or a hydrocarbon based radical containing from about 1 to about 100 carbon atoms; m is an integer ranging from 1 to about 3 and n is an integer ranging from 1 to about 5 with the proviso that the sum of m+ n is an integer not

to exceed 6 with (B) an amine compound corresponding to the general formula

wherein each of R_1 and R_2 is independently hydrogen or a radical selected from the group consisting of hydrocarbon based radicals containing from 1 to about 20 carbon atoms and hydroxyl substituted hydrocarbon based radicals containing from 2 to about 20 carbon atoms, R_3 is independently hydrogen or a radical selected from the group consisting of said radicals R_1 and R_2 and the radical

wherein each of R_4 and R_5 is independently hydrogen or a radical selected from the group consisting of said radicals R_1 and R_2, R_6 is a divalent hydrocarbon-based radical containing from 1 to about 18 carbon atoms and p is an integer ranging from 1 to about 10.

4,439,595

CHLORINATION OF HYDROQUINONE

Chih S. Chiang, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 21, 1983, Ser. No. 477,586
Int. Cl.³ C07C 39/24; C08G 63/68
U.S. Cl. 528—191 6 Claims

1. A process for chlorinating hydroquinone to obtain a chlorinated mixture comprising a major proportion of monochlorohydroquinone which process comprises adding sulfuryl chloride to a slurry or solution of hydroquinone and an alkyl ester having 2–8 carbon atoms, the mole ratio of sulfuryl chloride to hydroquinone being maintained in the range of from about 0.55 to about 1.2.

4,439,596

CHLORINATION OF HYDROQUINONE

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 21, 1983, Ser. No. 477,585
Int. Cl.³ C07C 39/24; C08G 63/68
U.S. Cl. 528—191 3 Claims

1. A process for chlorinating hydroquinone to obtain a chlorinated mixture containing a major proportion of chlorohydroquinone comprising adding sulfuryl chloride to a slurry or solution of hydroquinone and glacial acetic acid, the mole ratio of sulfuryl chloride to hydroquinone being in the range of from about 0.8 to about 1.2.

4,439,597

PROCESS FOR THE PREPARATION OF POLYBUTYLENE TEREPHTHALATE

Henry K. Hall, Jr., and Anne B. Padias, both of Tucson, Ariz., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 181,275, Aug. 25, 1980, Pat. No. 4,346,213. This application Apr. 16, 1982, Ser. No. 369,065
The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.
Int. Cl.³ C08G 63/34
U.S. Cl. 528—272 2 Claims

1. In the process for preparing polybutylene terephthalate in which terephthalic acid and 1,4-butanediol are reacted in a first stage at elevated temperature in the presence of polyesterification catalyst until the clearing point of the reaction is reached, and the reaction products of the aforesaid first stage are further reacted in a second stage at a temperature which is higher than that of the first stage and at substantially less than superatmospheric pressure to distill 1,4-butanediol, in the presence of a polycondensation catalyst to provide polybutylene terephthalate, the improvement is provided which comprises commencing the second stage reaction after a major part of the terephthalic acid has been consumed in the first stage but before the clearing point of the first stage reaction has been reached and when from about 10 weight percent to about 40 weight percent unreacted terephthalic acid remains in the first stage reaction medium.

4,439,598

MODIFIED POLY(TETRAMETHYLENE TEREPHTHALATE)

Bobby J. Sublett, Kingsport, and Samuel D. Hilbert, Jonesboro, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,463
Int. Cl.³ C08G 63/54
U.S. Cl. 528—295.3 6 Claims

1. Copolyester compositions derived from 100 mole % of a dicarboxylic component and 100 mole % of a glycol component, said acid component comprising terephthalic acid modified with about 10–30 mole % of at least one aliphatic dicarboxylic acid having 4 to 12 carbon atoms and said glycol component comprising 1,4-butanediol, said copolyester being further modified with about 10–30 mole % of dimer acid or dimer glycol, and said copolyester composition having a melting point of less than 200° C.

4,439,599

POLYURETHANE HAVING EXCELLENT ELASTIC RECOVERY AND ELASTIC FILAMENT OF THE SAME

Shoji Watanabe; Takuya Miho; Naoki Nakashima, all of Ohtake, and Yoshiyuki Ikemoto, Yokohama, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 29, 1982, Ser. No. 426,453
Claims priority, application Japan, Oct. 2, 1981, 56-157181; Aug. 6, 1982, 57-137094
Int. Cl.³ C08G 18/42
U.S. Cl. 528—80 4 Claims

1. A polyurethane having excellent elastic recovery, said polyurethane having been prepared by reacting an organic diisocyanate with a polycaprolactone polyester-diol, said polycaprolactone polyester-diol having been prepared by reacting a reaction mixture consisting essentially of (i) neopentyl glycol, (ii) a dibasic acid, an ester thereof or an anhydride thereof, and (iii) a material selected from the group consisting of epsilon-caprolactone, hydroxycaproic acid and mixture thereof, under conditions effective to form a random copolymer in which units derived from said neopentyl glycol and said component (ii) are randomly distributed in a polycaprolactone chain, said polycaprolactone polyester-diol having a hydroxyl value of 35 to 150 KOH mg/g and containing from 60 to 95% by weight of said material (iii).

4,439,600

CURE TO ELASTOMERS COMPOSITIONS

James P. Moran, Jr., Farmington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Jun. 3, 1983, Ser. No. 500,777
Int. Cl.³ C08G 81/02, 63/76; C08F 283/04
U.S. Cl. 528—392 74 Claims

1. A cure-to-elastomer composition comprising, in combination:

(a) a moderate-to-long chain di or polyfunctional prepolymer having vinyl reactive ends;

(b) a cross-link controlling material which is (i) reactive with said moderate-to-long chain di or polyfunctional prepoly-

mer, and (ii) soluble in or miscible with said moderate-to-long chain prepolymer; and

(c) a free radical polymerization initiator.

38. A method of forming an elastomeric material, comprising the steps of

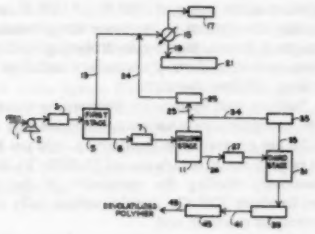
(1) providing a cure-to-elastomer composition which comprises at least one moderate-to-long chain di or polyfunctional prepolymer having vinyl reactive ends; and at least one cross-link controlling material which is (i) reactive with said moderate-to-long chain di or polyfunctional prepolymer, and (ii) soluble in or miscible with said moderate-to-long chain prepolymer; and

(2) curing the composition of step (1) in the presence of a free radical polymerization initiator.

4,439,601
MULTIPLE STAGE DEVOLATILIZATION PROCESS FOR MASS PROCESSABLE POLYMERS

J. L. McCurdy, Corona Del Mar, and Marvin A. Jarvis, Walnut, both of Calif., assignors to Cosden Technology, Inc., Dallas, Tex.

Continuation of Ser. No. 25,736, Mar. 30, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,419
Int. Cl.³ C08F 6/10
U.S. Cl. 528—481 13 Claims



1. A multiple-stage vacuum flash devolatilization process for removing volatiles selected from the group consisting essentially of unreacted monomers, dimers, and trimers from a thermoplastic polymeric material consisting essentially of a mass processable polymer containing said volatiles to produce a polymeric material containing less than about 0.1% by weight of volatiles, comprising the steps of:

(a) heating said thermoplastic polymeric material to a temperature at least above its softening point but below its degradation temperature;

(b) feeding said heated thermoplastic polymeric material through a first flash devolatilization zone maintained at a first sub-atmospheric pressure sufficient to vaporize and remove a major portion of said volatiles from said polymeric material but which is above the pressure at which mechanical refrigeration is needed to condense the vaporized volatiles, whereby there is produced in said first flash devolatilization zone a partially devolatilized thermoplastic polymeric material;

(c) withdrawing a first stream of vaporized volatiles at said first sub-atmospheric pressure from said first flash devolatilization zone;

(d) feeding said partially devolatilized thermoplastic polymeric material to at least one additional flash devolatilization zone, maintained at a second sub-atmospheric pressure which is below said first sub-atmospheric pressure of said first flash devolatilization zone and which is sufficient to vaporize and remove the remaining amount of said volatiles from said polymeric material to produce a finally devolatilized thermoplastic polymeric material containing less than about 0.1% by weight of volatiles;

(e) withdrawing a second stream of vaporized volatiles at said second sub-atmospheric pressure from said additional flash devolatilization zone;

(f) feeding the second stream of volatiles from said additional flash devolatilization zone into the first stream of volatiles withdrawn from said first flash devolatilization zone, to produce a combined stream of volatiles at first sub-atmospheric pressure; and

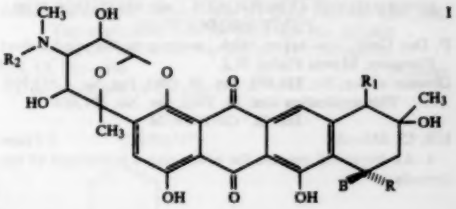
(g) condensing the combined stream of volatiles by contacting said combined stream with a heat transfer surface which has been cooled by cooling water which itself has been cooled without the use of mechanical refrigeration to a temperature sufficient to condense said volatiles at said first sub-atmospheric pressure.

4,439,602
NOGALAMYCIN DERIVATIVES

Paul F. Wiley, Portage, assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 130,894, Mar. 17, 1980, Pat. No. 4,318,790. This application Aug. 20, 1981, Ser. No. 294,655
Int. Cl.³ C07H 15/26
U.S. Cl. 536—6.4 8 Claims

1. A compound having the following structure:



I

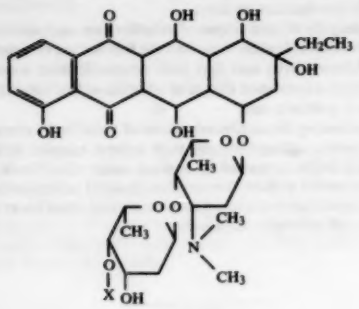
wherein R is selected from the group consisting of hydrogen and nogalosyl; R_1 is selected from the group consisting of hydrogen, carboxy and carbomethoxy; R_2 is selected from the group consisting of carboxylic acyl and hydrogen and B is selected from the group consisting of hydrogen and nucleophile selected from the group consisting of lower alkoxy, a sulfide anion, organic acid anion, amino, substituted amine, azide and carbanion; and carboxylic acid acylates thereof with the proviso that when R_2 is hydrogen, 9-hydroxy and the B substituent are in the con-position.

4,439,603
ANTHRACYCLINE DERIVATIVES OF β-RHODOMYCINONE GLYCOSIDES

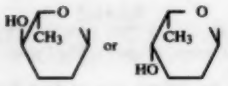
Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Tomoyuki Ishikura, Chigasaki; Akihiro Yoshimoto; Yasue Matsuzawa, both of Fujisawa, and Yukio Takatsuki, Yokohama, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1982, Ser. No. 436,630
Claims priority, application Japan, Oct. 29, 1981, 56-173465
Int. Cl.³ C07H 15/24
U.S. Cl. 536—6.4 3 Claims

1. Anthracycline derivatives having the formula



wherein X is the following sugar chain moiety



or a non-toxic acid addition salt thereof.

4,439,604

7-β-D-ARABINOFURANOSYL-7H-PYRROLO[2,3-d]PYRIMIDINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

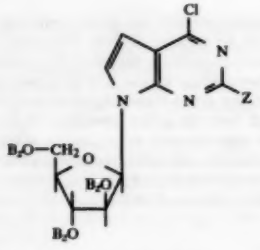
P. Dan Cook, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 229,471, Jan. 29, 1981, Pat. No. 4,352,795. This application Jun. 24, 1982, Ser. No. 391,806

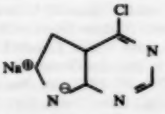
Int. Cl.³ C07H *19/16*

U.S. Cl. 536—24 **1 Claim**

1. An improved process for producing a compound of the formula



wherein Z is hydrogen or methylmercapto which comprises glycosylating 4-chloro-7H-pyrrolo[2,3-d]pyrimidine with 2,3,5-tri-O-benzyl-α-D-arabinofuranosyl chloride wherein the improvement comprises treating 4-chloro-7H-pyrrolo-[2,3-d]pyrimidin with sodium hydride in a suitable solvent to form the anion having the formula



and β-D-arabinofuranosylating said anion with 2,3,5-tri-O-benzyl-α-D-arabinofuranosyl chloride.

4,439,605

PROCESS FOR PRODUCING CELLULOSE ACETATE

Hideo Yabune, Himeji; Yoshiyuki Ikemoto, Yokohama; Younosuke Kato, Hyogo, and Manabu Uchida, Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Oct. 12, 1982, Ser. No. 433,615

Claims priority, application Japan, Nov. 30, 1981, 56-192042

Int. Cl.³ C08B *3/06*

U.S. Cl. 536—71 **10 Claims**

1. A process for producing cellulose diacetate which comprises the steps of:

(a) pretreating and activating 100 parts by weight of cellulose to prepare same for acetylation, then adding to said activated cellulose a mixture of 200 to 400 parts by weight of acetic anhydride, 0 to 350 parts by weight of glacial acetic acid, and 0.5 to 5 parts by weight of acid catalyst to form a reaction mixture, raising the temperature of the reaction mixture to a temperature in the range of from 50° C. to 85° C. at an approximately constant rate, and then maintaining said reaction mixture at said temperature for 3 to 20 minutes, thereby acetylating said cellulose to form primary cellulose acetate;

(b) then neutralizing said acid catalyst in the reaction mixture containing the primary cellulose acetate obtained in step (a) and placing said reaction mixture in a pressure system, then introducing steam under pressure into the system to change the temperature of said system to a temperature in the range of 125° C. to 170° C., and then maintaining the system at the latter temperature for 30 minutes to 6 hours, thereby hydrolyzing said primary cellulose acetate to form a secondary cellulose acetate comprising cellulose diacetate;

(c) then flashing said system by discharging same to the ambient atmosphere or a vacuum, recovering by condensation the gas generated by the flashing, said gas having a weight ratio of acetic acid/water of 70–80%/30–20%, and simultaneously cooling the remainder of the reaction mixture to about 100° C., thereby substantially stopping the hydrolysis reaction; and

(d) recovering said cellulose diacetate from said cooled reaction mixture.

4,439,606

ANTIATHEROSCLEROTIC 1-PIPERAZINECARBONYL COMPOUNDS

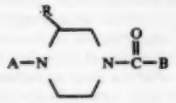
Mila T. Du, Suffern, N.Y., and Robert G. Shepherd, Selbyville, Del., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 6, 1982, Ser. No. 375,507

Int. Cl.³ C07D *403/04, 401/04, 401/06*; A61K *31/491*

U.S. Cl. 544—356 **30 Claims**

1. A compound selected from those of the formula



wherein A is selected from the group consisting of 2-pyrazinyl, 2-quinoxalinyl; B is selected from the group consisting of phenyl, mono- and polysubstituted phenyl (wherein the substituents may be fluoro, alkyl (C_1–C_4), or trifluoromethyl), benzyl, mono- and disubstituted benzyl (wherein the substituents may be chloro, nitro or alkyl (C_1–C_3) alkyl (C_1–C_4), cycloalkyl (C_3–C_6), pyridyl, 2-phenoxypropionyl, (alkyl (C_1–C_4)amino,) polyfluoro(F_7–F_{14})-alkyl(C_3–C_7), mono- and disubstituted phenylamino (wherein the substituents may be chloro, carboxylic acid or ethyl carboxylate), 6-p-chlorophenylhexyl, 5-(p-chlorobenzoyl)butyl, 2-p-chlorophenoxy-2-isopropyl and 1-methylbenzyl; and R is selected from the group comprising hydrogen and alkyl (C_1–C_3).

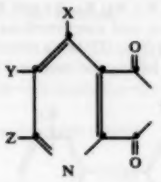
4,439,607

METHOD FOR THE PREPARATION OF CERTAIN PYRIDINE AND QUINOLINE 2,3-DICARBOXYLIC ANHYDRIDES

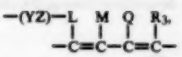
Thomas W. Drabb, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 25, 1982, Ser. No. 381,816
Int. Cl.³ C07D 491/048, 498/04
U.S. Cl. 546—89 5 Claims

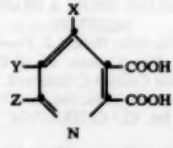
1. A process for the preparation of a compound of formula:



wherein X is hydrogen, halogen or methyl, with the proviso that when Y and Z are taken together to form a ring and YZ is represented by the structure: $-(CH_2)_n-$, where n is 3 or 4, then X is hydrogen; Y and Z each are hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_4 alkylthio, phenoxy, C_1–C_4 haloalkyl, nitro, cyano, C_1–C_4 alkylsulfonyl group, or phenyl optionally substituted with one C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen; and, when taken together, Y and Z may form a ring in which —(YZ)— is represented by the structure: $-(CH_2)_n-$, where n is an integer selected from 3 and 4, provided that X is hydrogen; or



where L, M, Q and R_3 are each hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkyl, NO_2, CN, phenyl, phenoxy, chlorophenyl, methylphenyl, or phenoxy substituted with one Cl, CF_3, NO_2 or CH_3 group, with the proviso that only one of L, M, Q or R_3 may represent a substituent other than hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; comprising: reacting one molar equivalent of a compound of formula:



wherein X, Y and Z are as hereinabove defined, with from 1 to 6 molar equivalents of phosgene in the presence of a solvent of aliphatic and aromatic hydrocarbons, alkylnitriles, ethers or mixtures thereof; and in the presence of from 0.05 molar equivalent to 0.75 molar equivalent of dimethylformamide, at a temperature range of from −5° C. to +50° C. for a period of time sufficient to essentially complete the reaction.

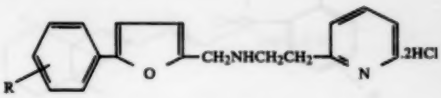
4,439,608

2-[2-(5-PHENYLFURFURYLAMINO)ETHYL]PYRIDINES

Stanford S. Pelosi, Jr., and Chia-Nien Yu, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Jun. 4, 1982, Ser. No. 384,871
Int. Cl.³ C07D 405/12
U.S. Cl. 546—283 3 Claims

1. A compound of the formula:



wherein R represents 4-nitro or 3,4-dimethoxy.

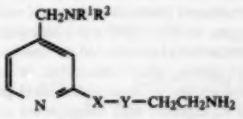
4,439,609

PYRIDINES

David G. Cooper, Letchworth, and George S. Sach, Welwyn, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 302,941, Sep. 16, 1981, Pat. No. 4,385,058.
This application Feb. 16, 1983, Ser. No. 467,065
Int. Cl.³ C07D 213/34, 213/64, 213/38, 401/06
U.S. Cl. 546—334 7 Claims

1. A compound of Structure 2



(2)

in which

R^1 and R^2 are C_1-C_4 alkyl or together with the nitrogen atom to which they are attached form a pyrrolidino or piperidino group;

Y is methylene or sulphur; and

X is methylene or oxygen provided that X is methylene when Y is sulphur.

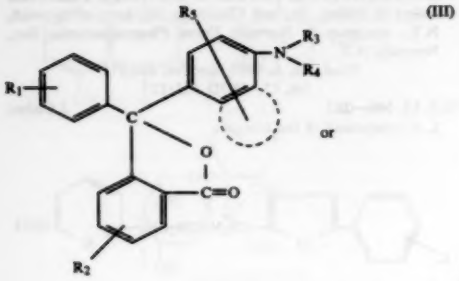
4,439,610

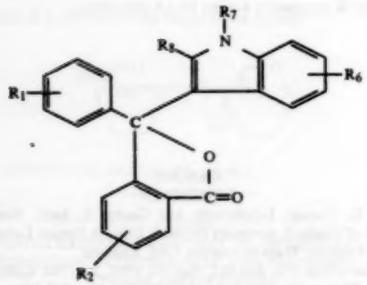
PROCESS FOR PREPARING TRIARYLMETHANE DERIVATIVES

Mitsuru Kondo, Kawanishi; Kiyoshi Yasui, Amagasaki; Makoto Miyake, Nishinomiya; Hiroshi Iwasaki, Kawanishi, and Tetsuo Shiraishi, Nishinomiya, all of Japan, assignors to Kanzaki Paper Manufacturing Company, Ltd., Tokyo, Japan

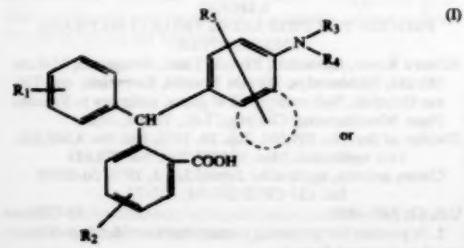
Division of Ser. No. 699,584, Jun. 24, 1976, Pat. No. 4,045,458.
This application Mar. 4, 1977, Ser. No. 774,613
Claims priority, application Japan, Jul. 3, 1975, 50-82898
Int. Cl.³ C07D 209/04, 307/77
U.S. Cl. 548—469 23 Claims

1. A process for preparing a triarylmethane derivative having the structural formula





wherein each R_1 and R_2 represents at least one of hydrogen, halogen, nitro group, alkyl group, amino group, alkyl-, benzyl-, phenyl-, tolyl-, or pentylene-substituted amino group, hydroxyl group, alkyl-substituted hydroxyl group, thiohydroxyl group or alkyl-substituted thiohydroxyl group, each R_3 and R_4 represents hydrogen, cyano-, hydroxyl-, halogen-, methoxy-, ethoxy-, or ethoxycarbonyl-substituted or unsubstituted alkyl group, cycloalkyl group, alkyl-substituted or unsubstituted aralkyl group, aryl group, or unsaturated alkyl group, or one or both of R_3 and R_4 together with the adjacent nitrogen atom may form a morpholine ring, a pyrrolidine ring, a pyrazolidine ring, a piperidine ring, an imidazoline ring, a piperazine ring, or a pyrimidine ring, R_5 represents at least one of hydrogen, halogen, alkyl group, nitro group, lower alkyl-substituted or unsubstituted amino group, lower alkyl-substituted or unsubstituted hydroxyl group, or lower alkyl-substituted or unsubstituted thiohydroxyl group, R_6 represents at least one of hydrogen, halogen, lower alkyl group, lower alkoxyl group, amino group, lower alkylamino group, nitro group, phenyl group or phenoxy group, R_7 represents hydrogen, alkyl group, aralkyl group or phenyl group, R_8 represents an alkyl group or alkyl-, halogen-, or alkoxy-substituted or unsubstituted phenyl group which comprises oxidizing a triarylmethane derivative having the structural formula



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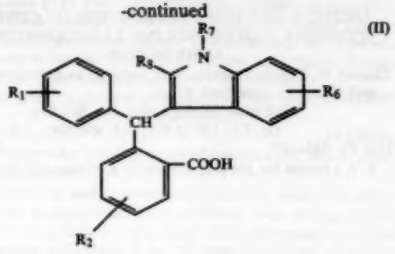
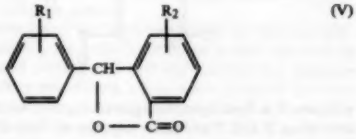
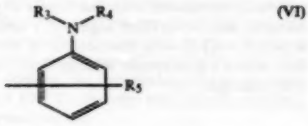


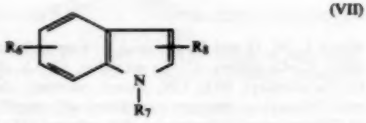
wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are the same as described hereinbefore, said triarylmethane derivative having the structural formula (I) or (II) being obtained by the reaction of 3-phenylphthalide having the structural formula



wherein R_1 and R_2 are the same as described hereinbefore with the aniline derivative having the structural formula



wherein R_3, R_4 and R_5 are the same as described hereinbefore, or with the indole derivative having the structural formula



wherein R_6, R_7 and R_8 are the same as described hereinbefore in the presence of a Friedel-Crafts type catalyst.

4,439,611

ISOLATION OF [S-(R*, S*)]-1-(3-ACETYLTHIO-3-BENZOYL-2-METHYLPROPIONYL)-L-PROLINE FROM A DIASTEREOMERIC MIXTURE

Sivaraman Raghu, Norwalk; Robert J. Proverb, Stamford, and Steven L. Peake, New Canaan, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 28, 1982, Ser. No. 393,002
Int. Cl.³ C07D 207/16
U.S. Cl. 548—533 **6 Claims**

1. A process for the isolation of [S-(R*,S*)]-1-(3-acetylthio-3-benzoyl-2-methylpropionyl)-L-proline from a mixture thereof with [S-(R*,R*)]-1-(3-acetylthio-3-benzoyl-2-methylpropionyl)-L-proline which comprises dissolving the mixture in a solvent system consisting of one part of trifluoroacetic acid and from about two to about ten parts of an organic solvent inert to trifluoroacetic acid and maintaining the solution at 45°–75° C. for a period of time of 8–24 hours while the [S-

(R*,S*)] isomer epimerizes to the [S-(R*,S*)] isomer and the [S-(R*,S*)] isomer crystallizes from the solution.

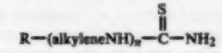
4,439,612

PREPARATION FOR USE AS LUBE OIL ADDITIVES OF THIOUREAS CONTAINING N-POLYALKYLENEAMINO HYDROCARBYL SUCCINIMIDO GROUPS

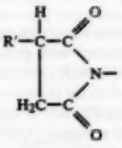
Gary T. Babic, Beacon, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,514
Int. Cl.³ C07D 207/40
U.S. Cl. 548—546 3 Claims

1. A compound of the formula:



wherein R is the succinimide residue



in which R′ is an alkyl or alkenyl residue having more than 8 carbon atoms; and n is an integer from 2 to 8, prepared by heating to 80° to 130° C. a reaction mixture of an alkyl or alkenylsuccinic anhydride and a polyalkylene amine terminated by two primary amino groups using half of the equimolecular amount of amine per equivalent of anhydride to form a succinimide; removing water; cooling said reaction mixture; adding thiourea; heating said mixture; purging ammonia formed with an inert gas and isolating a product having the above formula.

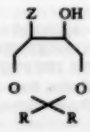
4,439,613

NOVEL AMINO-DIOXEPANE INTERMEDIATES FOR THE SYNTHESIS OF NEW NON-IONIC CONTRAST MEDIA

Milos Sovak, La Jolla, and Ramachandran Ranganathan, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 141,097, Apr. 17, 1980, Pat. No. 4,341,756, which is a continuation-in-part of Ser. No. 117,151, Jan. 31, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,213
Int. Cl.³ C07D 321/06
U.S. Cl. 549—347 6 Claims

1. A compound of the formula:



wherein

Z is azide or HNW, where W is hydrogen or an organic radical of from 1 to 12 carbon atoms,

R is hydrogen or an organic radical of from 1 to 12 carbon atoms, or the two Rs may be taken together to form a ring.

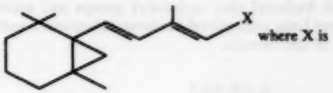
4,439,614

5,6-METHANO-5,6-DIHYDRORETINOIDS

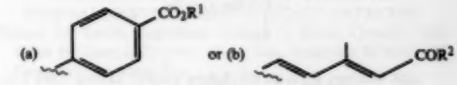
Marcia I. Dawson, Los Altos; Rebecca Chan, Palo Alto, and Peter D. Hobbs, Woodside, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Sep. 22, 1982, Ser. No. 421,065
Int. Cl.³ C07C 69/76, 69/74
U.S. Cl. 560—8 12 Claims

1. A compound of the formula



where X is



and R^1 is hydrogen, alkyl or aryl and R^2 is hydroxyl alkoxy or NR^3R^4 where R^3 is hydrogen, alkyl, or aryl and R^4 is alkyl or aryl and the 13-cis isomers of those compounds where X is (b).

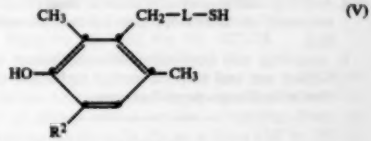
4,439,615

MERCAPTOPHENOL STABILIZERS

Siegfried Rosenberger; Samuel Evans, both of Riehen, Switzerland, and Bernard Gilg, St. Louis, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 239,712, Mar. 2, 1981, abandoned. This application Jul. 19, 1982, Ser. No. 399,502
Claims priority, application Switzerland, Mar. 3, 1980, 1665/80
Int. Cl.³ C07C 149/40
U.S. Cl. 560—15 5 Claims

1. A compound of the formula V



(V)

wherein R^2 is straight-chain or branched alkyl of 1 to 8 carbon atoms, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{10}-alkaryl or C_7–C_{10}-aralkyl, L is one of the bivalent radicals —$SCH_2CO.OCH_2CH_2$—, —$SCH_2CO.O(CH_2CH_2S)_y$—CH_2CH_2—, —$O.CO.C_pH_{2p}$—, —SC_pH_{2p}— or —$O.C_pH_{2p}$—, y is a number from 1 to 3 and p is a number from 1 to 18.

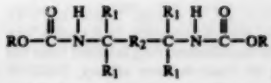
4,439,616

TERTIARY ARALKYL URETHANES AND ISOCYANATES DERIVED THEREFROM

Balwant Singh, Stamford; Laurence W. Chang, Orange, and Peter S. Forgione, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

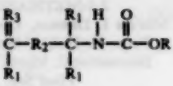
Filed Jul. 22, 1982, Ser. No. 400,799
Int. Cl.³ C07C 125/073, 125/065
U.S. Cl. 560—25 25 Claims

1. Urethanes selected from urethanes having the formulae:



and

-continued

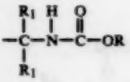


wherein

R is an alkyl radical having from 1 to 18 carbon atoms;

R_1 is an alkyl radical having from 1 to 3 carbon atoms;

R_2 represents an aromatic hydrocarbon moiety selected from phenyl, biphenyl and naphthalyl groups and such groups having halo, methyl and methoxy substituents and substituents of the formula:



and wherein R_3 is an alkylidene radical having from 1 to 3 carbon atoms.

18. A process for production of α,α,α',α'-tetramethyl xylylene diisocyanates which comprises:

a. reacting a diisopropenyl benzene and isopropenyl-α,α-dimethylbenzyl urethane with an excess of methyl carbamate in the presence of moderate heat and an acid catalyst to convert the olefins to urethanes,

b. neutralizing said catalyst in the resultant mixture,

c. stripping unreacted methyl carbamate from the neutralized mixture,

d. thermally cracking the stripped mixture to convert urethanes to isocyanates whereby a mixture including tetramethyl xylylene diisocyanate and isopropenyl dimethylbenzyl isocyanate is obtained,

e. recovering methanol from said mixture during thermal cracking,

f. separating isopropenyl-dimethylbenzyl isocyanate and tetramethyl xylylene diisocyanate from the cracked mixture,

g. reacting said isopropenyl dimethylbenzyl isocyanate and methanol to form isopropenyl-dimethylbenzyl urethane and,

h. recycling said isopropenyl-dimethylbenzyl urethane so formed and said stripped methyl carbamate to said reaction with diisopropenyl benzene.

4,439,617

N-NAPHTHOYLGLYCINE DERIVATIVES

Kazimir Sestanj, St. Laurent; Nedumparambil A. Abraham, Dollard des Ormeaux; Francesco Bellini, Mount Royal, and Adi Treasurywala, Point Claire, all of Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

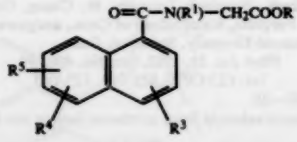
Filed Nov. 13, 1981, Ser. No. 321,306

Claims priority, application Canada, Mar. 2, 1981, 372119

Int. Cl.³ C07C *101/06*

U.S. Cl. 560—39 **3 Claims**

1. A compound of the formula



wherein R^1 is lower alkyl; R^3 is 4-halo, 5-halo or 5-trifluoromethyl and R^4 and R^5 each is hydrogen; or R_3 and R^4 are a pair of substituents on the naphthalene ring selected from the group of pairs consisting of 3-halo-4-lower alkoxy, 5-halo-6-lower alkyl, 5-halo-6-lower alkoxy, 5,7-dihalo and 5-(trifluoromethyl)-6-lower alkoxy, and R^5 is hydrogen; or R^3 is 4-lower alkoxy, R^4 is 5-(trifluoromethyl) and R^5 is 6-lower alkoxy; and R is hydrogen, methyl or ethyl.

4,439,618

PROCESS FOR THE PREPARATION OF METHYL ESTERS OF ARYLPROPIONIC ACIDS OPTICALLY ACTIVE

Giuseppe Cometti, Verbania-Pallanza, and Gian P. Chiusoli, Parma, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Aug. 5, 1982, Ser. No. 405,608

Claims priority, application Italy, Aug. 6, 1981, 23391 A/81

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—56 **17 Claims**

1. A process for the regioselective and enantioselective preparation of methyl esters of arylpropionic acids, by carbonylation of the corresponding vinylaromatic compound, in the presence of palladium catalysts, characterized in that a compound having the formula (II):

$$R—CH=CH_2 \qquad (II)$$

wherein R is selected from the group consisting of aryl radicals and aryl radicals substituted with groups that are inert under the reaction conditions, is made to react with carbon monoxide and with methyl alcohol in the presence of a palladium catalyst associated with the optically active diphenylneomenthylphosphine and in the further presence of trifluoroacetic acid, under a substantially atmospheric pressure and at a temperature comprised between 20° C. and 80° C. about.

4,439,619

FLUORINATED PENTENE DIAMINE DERIVATIVES

Philippe Bey, Strasbourg, France; Fritz Gerhart, Kehl-Leutesheim, Fed. Rep. of Germany, and Michel Jung, Illkirch-Graffenstaden, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

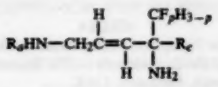
Filed Aug. 21, 1981, Ser. No. 295,152

Claims priority, application United Kingdom, Aug. 23, 1980, 8027519; Nov. 26, 1980, 8037841

Int. Cl.³ C07C *101/24, 87/26*

U.S. Cl. 560—169 **14 Claims**

1. A compound of the formula:



wherein

R_a is hydrogen or L-δ-glutamyl,

R_c is hydrogen or —COR_3 wherein R_3 is hydroxy, or when R_a is hydrogen, C_1–C_8 alkoxy, and p is 1 or 2,

or a pharmaceutically acceptable addition salt thereof.

4,439,620

2,4-DICHLORO-5-FLUOROBENZOYL HALIDE AND A PROCESS FOR ITS PREPARATION

Erich Klauke, and Klaus Grohe, both of Odenthal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

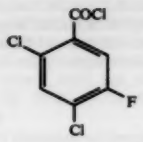
Filed Jul. 14, 1982, Ser. No. 397,958

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1981, 3142856

Int. Cl.³ C07C *63/04*

U.S. Cl. 562—493 **16 Claims**

1. 2,4-Dichloro-5-fluorobenzoyl chloride of the formula



(I)

4,439,621

OXYDEHYDROGENATION PROCESS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 2, 1982, Ser. No. 404,206
Int. Cl.³ C07C 67/317, 51/377
U.S. Cl. 562—599 3 Claims

1. In a process for the catalytic conversion of isobutyric acid or ester to the corresponding alpha, beta-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen at an elevated temperature; the improvement comprising carrying out the process at a temperature in the range of from 260° to 450° C. using as catalyst a material having the gram-atom emperical formula $Fe_aP_bSi_cV_dMo_eO_x$ wherein a is 0.05–1.0, b is 0.05–2.0, c is 0.05–2.0, d is 0.5–6.0, e is 6–12.0, and x is a number that satisfies the sum of the unshared positive valences of the other elements shown in the formula.

4,439,622

PROCESS OF FORMING LARGE CRYSTALLED 1,3,5-TRIAMINOTRINITROBENZENE

Rolf Hansen; Walter Engel, both of Pfinztal, and Hiltmar Schubert, Walzbachtal, all of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e. V., Munich, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,364
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101783
Int. Cl.³ C07C 85/00
U.S. Cl. 564—406 8 Claims

1. A process for the manufacture of 1,3,5-triaminotrinitrobenzene having a large crystal size comprising aminating 1,3,5-trichlorotrinitrobenzene with an aminating agent having a decomposition temperature above 160° C. at a temperature greater than about 160° C. in the presence of an effective amount of at least one antioxidant.

4,439,623

PROCESS FOR THE PREPARATION OF MONOCHLOROACETONE

Kenneth H. Krieger, Chatham; Lawrence J. Naldi, Fanwood; Carlos B. Rosas, and Vijay Samant, both of Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 5, 1981, Ser. No. 308,882
Int. Cl.³ C07C 45/62
U.S. Cl. 568—393 12 Claims

1. In a process for the continuous vapor-liquid phase production of monochloroacetone from chlorine and acetone in a reactor and removing the monochloroacetone from the reaction stream in a fractionator, the improvement comprises passing the vapor phase effluent from the fractionator sequentially through a series of 3 temperature controlled condensers with decreasing temperature ranges wherein:

A. the first condenser in maintained at a temperature of from 40° to 55° C. and the condensate therefrom enters a common reflux drum and the vapor phase effluent enters the second condenser;

B. the second condenser in maintained at a temperature of from 10° to 35° C. and the condensate therefrom enters the same common reflux drum as the condensate from the first condenser, and the vapor phase effluent therefrom enters the third condenser;

C. the third condenser is maintained at a temperature of from −20° to −40° C. and the condensate therefrom enters the same common reflux drum as the condensate from the first and second condensers and the vapor phase effluent therefrom consisting entirely of hydrogen chloride is isolated; and

D. the contents of the common reflux drum are fed continuously back into the reactor or to both the reactor and the fractionator for the production of monochloroacetone.

4,439,624

CONVERSION OF DIMETHYL ETHER TO FORMALDEHYDE USING BI-MO-CU CATALYST

Robert M. Lewis, Sugarland; Robert C. Ryan, Houston, and Lynn H. Slaugh, Cypress, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 7, 1982, Ser. No. 433,320
Int. Cl.³ C07C 45/32
U.S. Cl. 568—470 4 Claims

1. A process for converting dimethyl ether to formaldehyde which comprises contacting the dimethyl ether with oxygen at a temperature ranging from about 300° C. to about 600° C. with a catalyst comprising a mixture of oxides of bismuth, molybdenum and copper wherein the catalyst contains about 20 to about 80% by weight of bismuth, measured as a metal, from about 10 to about 50% by weight of molybdenum measured as the metal and from about 0.1 to about 10% by weight of copper, measured as a metal, exclusive of any inert support.

4,439,625

PRODUCTION OF FORMALDEHYDE

Velliyur Nott M. Rao, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1982, Ser. No. 427,418
Int. Cl.³ C07C 45/29, 47/04
U.S. Cl. 568—473 8 Claims

1. An oxidation process comprising contacting methanol in the presence of oxygen with a catalyst comprising silver, silver-gold alloys or copper-gold alloys, at from 450° to 750° C. wherein from 0.001 to 15 parts per million, based on methanol, of phosphorus from a phosphorus source is present in the reaction mixture entering the reactor and recovering formaldehyde.

4,439,626

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 29, 1982, Ser. No. 403,256
Int. Cl.³ C07C 5/09
U.S. Cl. 585—435 13 Claims

1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing catalytically-effective amounts of copper, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, to produce styrene.

4,439,627

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 29, 1982, Ser. No. 403,257
Int. Cl.³ C07C 5/09
U.S. Cl. 585—435 **12 Claims**

1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing catalytically effective amounts of iron, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, to produce styrene.

4,439,628

CATALYST AND REVERSE DISPROPORTIONATION PROCESS

Charles F. Hobbs, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 29, 1982, Ser. No. 403,255
Int. Cl.³ C07C 5/09
U.S. Cl. 585—435 **12 Claims**

1. A process for the reverse disproportionation of stilbene and ethylene which comprises contacting stilbene and ethylene at reverse disproportionation conditions with an activated catalyst containing bismuth, tungsten, and an alkali or alkaline earth component or compounds thereof supported on a carrier material, wherein the atomic ratio of bismuth to tungsten is from 1:20 to 1:2, to produce styrene.

4,439,629

EXTRACTION PROCESS FOR BETA-CAROTENE

Rudolf Rüegg, Bottmingen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 6, 1981, Ser. No. 318,704
Int. Cl.³ C07C 7/10
U.S. Cl. 585—803 **6 Claims**

1. A process for extracting beta-carotene from algae containing beta-carotene comprising treating the algae with calcium hydroxide at a temperature of 50° C. to 100° C. to saponify the chlorophyll present in the algae and produce a residue, treating said residue with a solvent for beta-carotene which removes the beta-carotene from said residue, and thereafter recovering beta-carotene from said solvent.

4,439,630

SILICONE COMPOSITIONS FOR BURIED ELECTRICAL SPLICE CLOSURES

Eugene D. Groenhof, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 6, 1981, Ser. No. 261,070
Int. Cl.³ H02G 15/24; H01B 7/00
U.S. Cl. 174—21 R 19 Claims

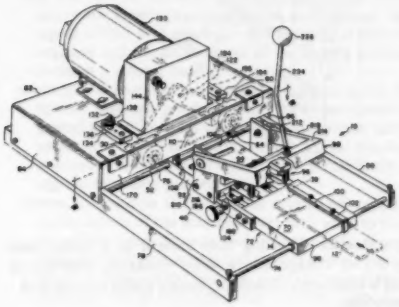
1. In an insulated electrical cable splice employing a dielectric fluid to encapsulate and insulate the splice, the improvement comprising using a silicone fluid having aliphatic hydrocarbon or substituted aliphatic hydrocarbon substituents, with a maximum viscosity of 1000 cs., and with a specific gravity of at least 1.02 as the dielectric fluid.

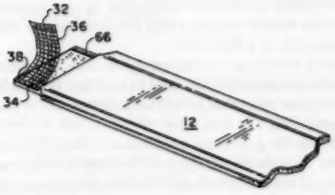
4,439,631

METHOD AND MACHINE FOR PREPARING AN END PORTION OF A MULTI-CONDUCTOR FLAT CABLE FOR RECEIVING A CONNECTOR THEREON

Charles Shields, 655 Woodland Dr., Crystal Lake, Ill. 60014

Filed Sep. 14, 1981, Ser. No. 302,227
Int. Cl.³ H02G 15/02, 1/14
U.S. Cl. 174—74 R 50 Claims





1. A method of preparing a portion of an insulated and electrically shielded multiconductor element for receiving a connector thereon, said method comprising the steps of:

advancing a portion of the element to a cutting station;

cutting notches in the side edges of a portion of the element;

advancing a portion notched at the cutting station to a grinding station;

grinding the portion of the element to remove an insulating surface coating of the element;

moving the portion to a scoring station;

scoring a score line in an exposed portion of an electric shield along the width thereof, said step of scoring providing only a partial cut of the electric shield so that portions of the electric shield on either side of the score line are still attached to each other.

31. A machine for preparing a portion of an insulated and electrically shielded multiconductor element for receiving a connector thereon, comprising, in combination:

a main frame;

means for positioning a portion of the element thereon which portion contains that part of the element to be prepared for reception of a connector thereto, said means for positioning being mounted to a front section of said main frame;

means for cutting off at least one side edge portion of the element at that part which is to be prepared to receive a connector to form at least one set back edge portion in alignment with at least one conductor in the element adjacent the set back edge portion, said means for cutting off being fixedly attached to a portion of said means for positioning a portion of the element, so that that part of the element to be prepared for reception of a connector may be positioned at said means for cutting off at least one side edge portion;

means for grinding an insulating surface coating of the element situated above an electric shield in the element to remove the insulating surface coating along that portion of the element to be prepared for reception of a connector, said means for grinding being mounted to a rear section of said main frame, so that that part of the element to be prepared may be situated at said means for grinding;

means for scoring a lateral edge of the electric shield, said means for scoring forming a score line in the electric shield such that the scored portion of the electric shield remains fixedly connected to the remainder of the electric shield along the length of the score line, said means for scoring also being mounted to said main frame, so that that part of the element to be prepared may be positioned thereat by said means for positioning; and

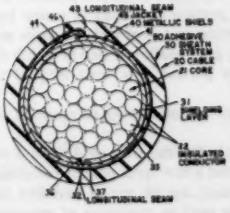
means for movably mounting said means for positioning a portion of the element for translation between said means for grinding and said means for scoring to thereby perform the necessary operations on the portion of the element to receive a connector thereon; said means for movably mounting connecting said means for positioning to the front section of said main frame for relative movement thereto.

4,439,632

BONDED SHEATH CABLE

Charles J. Aloisio, Jr., Atlanta; George S. Brockway, II, Lawrenceville; Alvin C. Levy, Atlanta; Randy G. Schneider, Marietta, and George M. Yanizeski, Roswell, all of Ga., assignors to Western Electric Co., Inc., New York, N.Y. and Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Continuation of Ser. No. 225,082, Jan. 14, 1981, Pat. No. 4,328,394. This application Apr. 14, 1982, Ser. No. 368,183
The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.
Int. Cl.³ H01B 7/18
U.S. Cl. 174—106 D 9 Claims



1. A bonded sheath cable, which comprises:

a core which includes a plurality of conductors; and

a sheath which encloses and which is juxtaposed with said core, said sheath including:

a corrugated steel shield which encloses said core, said shield having inwardly and outwardly facing major sur-

faces with an overlapped seam having overlying and underlying portions formed between overlapping adjacent longitudinal edge portions of said shield, said shield being formed with at least the longitudinal edge portion of the inwardly facing surface of said overlying portion being substantially juxtaposed to the outwardly facing surface of the underlying portion of said shield; and

a jacket which is made of a plastic material and which is adhesively bonded to substantially all of said outwardly facing surface of said corrugated metallic shield with a bond strength which is sufficient to prevent delamination and buckling of the sheath in a temperature range of about −15° C. to about 70° C., said jacket plastic which is notched circumferentially by said corrugated shield and longitudinally by said overlapped seam being made of a plastic material having elongation properties sufficient for the jacket to resist rupture caused by corrugation and seam notching when said jacket is biaxially stressed in said range of temperatures.

4,439,633

CORROSION RESISTANT ARMORED CABLE AND METHOD OF MANUFACTURING SAID CABLE

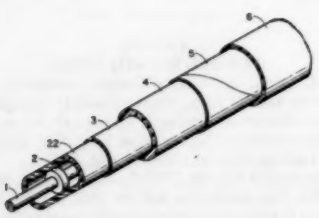
Albertus T. M. Grooten, Waddinxveen, Netherlands, assignor to N.K.F. Groep B.V., Netherlands

Filed Oct. 8, 1982, Ser. No. 433,750

Claims priority, application Netherlands, Oct. 14, 1981, 8104667

Int. Cl.³ H01B 7/22

U.S. Cl. 174—106 R **5 Claims**



1. A cable comprising an armoring of a zinc-plated steel band in which the steel band comprises a zinc protective layer on the flat sides only of the band, said protective layer comprising a first layer portion consisting of a zinc iron alloy and a second layer portion on top of said first layer portion, consisting of essentially pure unalloyed zinc in which the thickness of the second layer portion is at least 90% of the total layer thickness.

4. A method of manufacturing an armored cable, comprising:

applying onto both sides of a steel sheet a zinc protective layer such that a first layer portion consisting of zinc-iron alloy is formed and on top of said first layer portion a second layer portion consisting of essentially pure unalloyed zinc is formed whereby the thickness of the second layer portion is at least 90% of the total layer thickness,

cutting said sheet into a plurality of elongated bands having the zinc layer on both sides and having unprotected edges, and

helically wrapping said bands about a cable so as to form an armored cable.

4,439,634

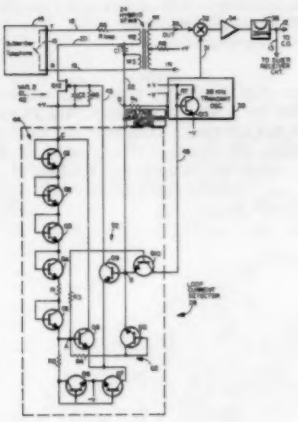
CARRIER SUBSCRIBER TELEPHONE OFF-HOOK DETECTOR

Tom L. Blackburn, San Jose, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Apr. 2, 1982, Ser. No. 364,820

Int. Cl.³ H04M 3/22

U.S. Cl. 179—2.51 **28 Claims**



1. Apparatus for detecting loop current in a closed path including a DC voltage source, loop resistance, and switch means that is selectively closed for passing a loop current in the path, comprising;

a current sensing resistor in series in the path with one terminal thereof electrically connected to one terminal of the voltage source and the other terminal thereof electrically connected to a first node;

a control transistor having one of its base and emitter electrodes electrically connected to said first node, and having a collector electrode electrically connected to the voltage source;

first means for providing a reference voltage of a prescribed value at a second node and operable for decreasing the value of reference voltage from the prescribed value when current is bled away from said second node;

second means for connecting the other one of said control transistor's base and emitter electrodes to said second node, said reference voltage causing said control transistor to be normally conducting when the switch means is open;

a first resistor and diode means electrically connected in series between said first and second nodes, said diode means being normally conducting when the switch means is open for passing current away from said second node for decreasing the magnitude of the reference voltage from the prescribed value for prebiasing said control transistor in the direction of non-conduction;

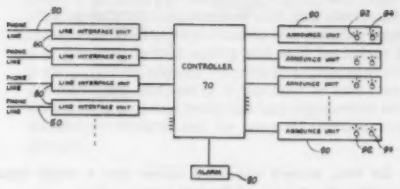
said control transistor being responsive to a change in voltage on at least one of said nodes that is caused by current in the loop when the switch means is closed for changing the level of conduction of said control transistor; and

third means responsive to a change in the conduction rate of said control transistor for indicating that loop current is flowing in the path.

4,439,635
MESSAGE DELIVERY SYSTEM

Peter F. Theis, 3203 Bay View La., McHenry, Ill. 60050, and Gregory Buchberger, Mount Prospect, Ill., assignors to Peter F. Theis, Gurnee, Ill.

Filed Feb. 9, 1982, Ser. No. 347,293
Int. Cl.³ H04M 1/64
U.S. Cl. 179—6.2 16 Claims



1. A message delivery system for repeatedly delivering a predetermined audio message to a plurality of line interface units, each of which is coupled to a respective telephone line, said message delivery system comprising:

first and second message playback units, each comprising means for generating a respective audio signal, the audio signal of the first playback unit forming a first message segment and the audio signal of the second playback unit forming a second message segment;

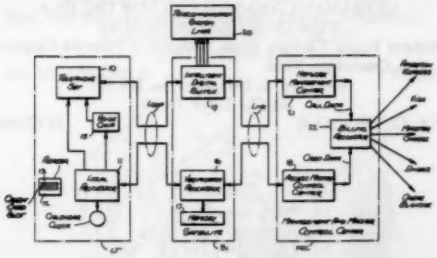
controller means for automatically activating the first and second message playback units in an automatically repeated sequence, such that the first playback unit is activated for a first time period and the second playback unit is activated for a second time period, immediately following the first time period;

means, included in the controller means, for supplying the audio signals of the activated playback units to the plurality of line interface units such that the audio signal of the first playback unit is supplied to the interface units during the first time period and the audio signal of the second playback unit is supplied to the interface units during the second time period, and the first and second message segments formed by the respective audio signals make up the predetermined message.

4,439,636
CREDIT CARD ACTUATED TELECOMMUNICATION ACCESS NETWORK

Martha Newkirk, and Larry Newkirk, both of 8 Park La., Madison, N.J. 07940

Filed Mar. 9, 1982, Ser. No. 356,430
Int. Cl.³ H04M 17/02
U.S. Cl. 179—7.1 R 10 Claims



1. A public access network operating in conjunction with telecommunication lines leasable from a common carrier at a bulk rate, making it possible for callers holding a machine-readable credit card provided with a magnetic stripe and issued by any one of a predetermined plurality of credit card companies authorizing the holder to purchase merchandise and services to dial calls from any local station included in the network, the network comprising:

A. a group of satellites each installed at a different location, each satellite having an intelligent digital switch coupled to said telecommunication lines to effect a connection to that one line included in said lines which is appropriate to a call dialed;

B. averification processor provided with a calendar clock, and means to compare the expiration date on a credit card presented by a caller with the date on which the call is dialed;

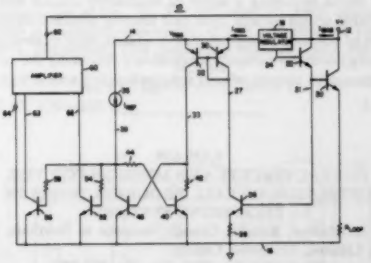
C. a plurality of local stations at each location linked to the installed satellite, each station being open to the public and being provided with a communication set which when activated is coupled to the intelligent switch at the installed satellite, a card reader including a magnetic head for scanning the stripe on the caller's card and deriving therefrom a digital signal identifying the company issuing the card, its serial number and expiration date, and activation means responsive to said signal to determine if the scanned card is acceptable to the network, said means transferring the signal to the verification processor which tests the card number against a stored table in invalid card numbers to determine its validity and which, if the card passes this test, then functions to activate the communication set to permit the caller to dial, the activated set being then coupled to said switch which engages said one of said transmission lines to cause the call to go through; and

D. A control central linked to the satellites in the group to supervise the operations thereof, said central extracting information from the intelligent switch at each satellite regarding the duration and placement of each of the calls made at the local stations, which information is coordinated with information it extracts from the verification processor regarding the identity and the serial number of the credit cards of the callers making said calls, from which coordinated information the central generates a billing record for submission to the companies issuing the cards, whereby each company can then directly bill their card holders for calls made through the network without obtaining billing information from the common carrier.

4,439,637
LOW LOOP CURRENT SWITCH LATCH CIRCUIT

Michael B. Terry, Denton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 28, 1981, Ser. No. 335,145
Int. Cl.³ H04B 3/36
U.S. Cl. 179—16 F 5 Claims



1. A switch latch circuit for controlling a bias current of an amplifier in a telephone subscriber's device powered by the telephone lines, comprising:

means for monitoring a residual current to produce a control current proportional to said residual current;

cross-coupled transistor means connected to receive said

control current and switch with hysteresis between a first state and a second state as a function of said control current, and

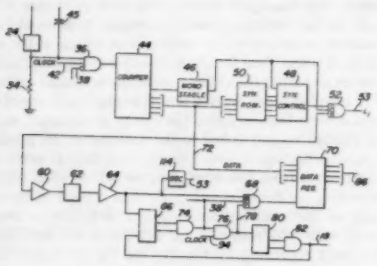
means coupled to said cross-coupled transistor means for drawing a predetermined bias current from said amplifier when said cross-coupled transistor means is in a selected one of said states.

4,439,638

SOUND-ACTIVATED CODE-CONTROLLED DETECTION SYSTEM FOR TELEPHONES AND THE LIKE

Scott Seligsohn, Penn Valley; Duane R. Bolgiano, Bala Cynwyd, and Sherwin I. Seligsohn, Penn Valley, all of Pa., assignors to International Mobile Machines Corp., Philadelphia, Pa.

Filed Jan. 28, 1982, Ser. No. 343,445
Int. Cl.³ H04M 1/26
U.S. Cl. 179—84 C 10 Claims



1. A function-generating system comprising a receiver station, means at said receiver station to receive a transmitted signal from a sending station and to convert said transmitted signal into an initiating signal which generates an acknowledging sound signal at said receiver station, means to transmit said acknowledging sound signal to said sending station, a memory at said receiver station, means to program said memory in accordance with a predetermined enunciated sound pattern, means to transmit an enunciated sound pattern from said sending station to said memory in response to said acknowledging sound signal, and means to generate a function in response to a signal from said memory when the enunciated sound pattern from said sending station corresponds to the enunciated sound pattern programmed into said memory, said acknowledging sound signal including a series of successive sounds and said enunciated sound pattern from said sending station comprising a series of corresponding successive sounds, each of said corresponding successive sounds successively following the respective successive sounds of said acknowledging sound signal.

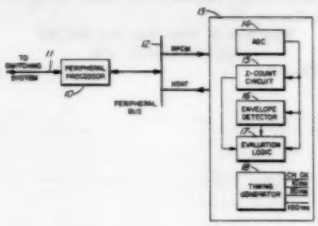
4,439,639

DIGITAL CIRCUIT AND METHOD FOR THE DETECTION OF CALL PROGRESS TONES IN TELEPHONE SYSTEMS

Ernst A. Munter, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 19, 1982, Ser. No. 359,896
Claims priority, application Canada, Feb. 12, 1982, 396210
Int. Cl.³ H04M 1/00
U.S. Cl. 179—84 VF 25 Claims

1. A circuit for determining the identity of a call progress tone in a telephone system, comprising: first means responsive to said tone for measuring the level thereof, second means for determining the approximate higher frequency component of the tone, third means for determining the envelope frequency of the tone, and a translation circuit for translating the results



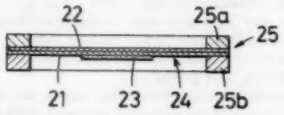
from the first, second and third means into a single signal representing the identity of the call progress tone.

4,439,640

PIEZOELECTRIC LOUDSPEAKER

Tadashi Takaya, Kanazawa, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 31, 1981, Ser. No. 336,038
Claims priority, application Japan, Jan. 5, 1981, 56-626
Int. Cl.³ H01L 41/08
U.S. Cl. 179—110 A 6 Claims



1. A piezoelectric loudspeaker comprising:

a disc-shaped diaphragm formed of a metallic plate;

a disc-shaped film formed of a material having a smaller Q-factor than and substantially equal in diameter to said diaphragm; and

a disc-shaped piezoelectric ceramic plate smaller in diameter than said diaphragm;

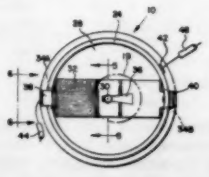
said diaphragm, said film and said piezoelectric ceramic plate being adhered concentrically to each other so as to form an integral member with said piezoelectric ceramic plate located on the outside of said integral member; said integral member being supported at the outer peripheral portion thereof to a frame.

4,439,641

ULTRASONIC TRANSDUCER FOR USE IN A VIBRATORY ENVIRONMENT

Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1981, Ser. No. 298,577
Int. Cl.³ H04R 19/00
U.S. Cl. 179—111 R 13 Claims



1. An electroacoustical transducer assembly, comprising:

a relatively inflexible backplate having an electrically conductive major surface and having another electrically conductive surface, that is electrically connected to said major surface, on the opposite side thereof;

a relatively flexible diaphragm having electrically conductive and electrically nonconductive surfaces on opposite sides thereof; and

an electrically conductive spring for connecting said backplate to an electrical circuit, for urging said major backplate surface into engagement with said electrically nonconductive diaphragm surface and for properly tensioning said diaphragm, said spring and said backplate having portions thereof adapted for press fit engagement with one another when said spring is mounted on said transducer assembly to urge said backplate into engagement with said diaphragm surface and to properly tension said diaphragm.

4,439,642

HIGH ENERGY ULTRASONIC TRANSDUCER

John M. Reynard, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1981, Ser. No. 334,731
Int. Cl.³ H04R *19/00*
U.S. Cl. 179—111 R **16 Claims**

1. An electroacoustical transducer assembly, comprising:

a backplate member;

a flexible vibratile diaphragm comprising a relatively thin conductive film affixed to a flexible support layer with said conductive film facing toward a surface of said backplate member and said supporting layer facing away from said backplate surface; and

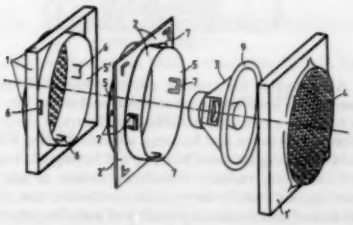
a solid dielectric layer having a thickness that is less than the thickness of said flexible support layer and that is sandwiched between and in contact with facing surfaces of said backplate member and said conductive diaphragm film.

4,439,643

SYSTEM ASSEMBLY FOR MOUNTING ELECTRICAL APPARATUS ON WALLS AND CEILINGS

René Schweizer, Seestrasse 121, 8800 Thalwil, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,286
Int. Cl.³ H04R *1/00*
U.S. Cl. 179—146 E **9 Claims**



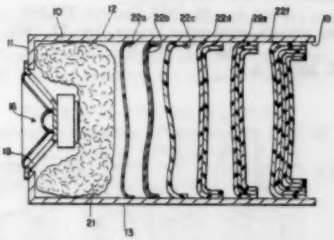
1. A system assembly for mounting electrical apparatus such as loud speakers on ceilings and walls, comprising a base plate, a mounting plate, electricl apparatus, and a front grill; the base plate, and the front grill being connected to the mounting plate by push-fit rings with springy locking clip means, the locking clip means being on the base plate and the front grill and being complementary to second locking clip means on the mounting plate, the locking clip means of the mounting plate, the base plate and the front grill cooperating to form an enclosure and to hold the assembly about an electrical apparatus contained therein.

4,439,644

LOUD SPEAKER ENCLOSURE

Paul F. Bruney, III, New Orleans, La., assignor to Edmund M. Jaskiewicz, Washington, D.C., a part interest

Filed Nov. 24, 1981, Ser. No. 324,412
Int. Cl.³ G10K *13/00*
U.S. Cl. 179—146 E **12 Claims**



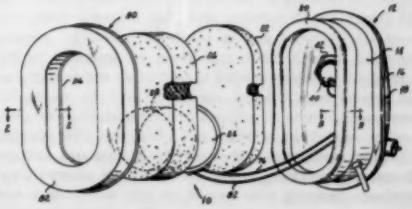
1. An enclosure for a loudspeaker driver comprising means for defining an enclosure having an interior space and adapted for the mounting of a loudspeaker driver having an exposed front face to produce sound waves to be transmitted to a listening space exterior of the loudspeaker enclosure, said enclosure means having at least one opening between the interior and exterior spaces thereof, and a plurality of successive spaced limp nonporous barriers to seal said opening between the interior and exterior spaces of the enclosure to relieve pressure behind the loudspeaker driver while attenuating the rear sound waves.

4,439,645

SOUND ATTENUATING EARCUP ASSEMBLY WITH OUTSIDE COMMUNICATION CAPABILITY

John P. Scalzo, Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.

Continuation of Ser. No. 150,159, May 15, 1980, abandoned, which is a continuation-in-part of Ser. No. 106,909, Dec. 26, 1979, abandoned. This application Mar. 26, 1982, Ser. No. 362,508
Int. Cl.³ H04M *1/19*; H04R *1/10*
U.S. Cl. 179—156 R **2 Claims**



1. In a sound attenuating earcup and local ambient communication assembly powered by a battery and adapted to permit the earcup wearer to hear local sounds without removing said

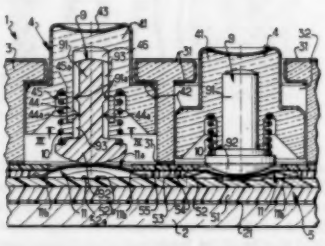
earcup when in a first use independently of an external electronic communication system having a power supply and adapted to a second use in conjunction with said external electronic communication system upon interengagement of electrical connectors leading respectively to said local ambient communication system and to said external electronic communication system, the improvement comprising an electrical connection between said battery and said power supply upon engagement of said connectors to charge said battery in the second use of said assembly.

4,439,646

KEYBOARD SWITCH ASSEMBLY

Andre M. Bouvrande, Boissy St Antoine, France, assignor to Societe de Telecommunications Electronique Aeronautique et Maritime T.E.A.M., France

Filed Apr. 20, 1982, Ser. No. 370,258
Claims priority, application France, Apr. 22, 1981, 81 08024
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **6 Claims**



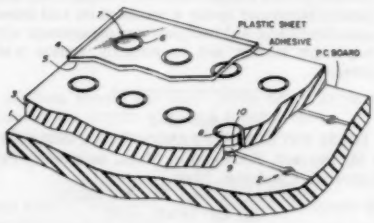
1. A keyboard switch assembly adapted to be removably mounted on a wall of a vehicle dashboard or of another apparatus, said assembly comprising: a front face plate; an assembly of plates removably mounted under the front face plate, said plate assembly including a printed circuit board having electric contact thereon; a plurality of resiliently deformable contact members, each having a concave portion connected to supporting length of said contact member on said circuit board; a plurality of depressable keys projecting through said front face plate, each depressable key including a body portion positioned in a recess in said front face plate and a plunger having an elongated portion axially slidable within a chamber of said body portion and a bulging-shaped head adjacent to said concave portion of said contact member, said head having a flat surface on which bears one end of a compression spring surrounding said plunger, the other end of said spring resting in a cavity in said body portion; each of said keys being depressable to deflect via said bulging-shaped head a respective contact member to establish an electrical contact between contacts on said circuit board; wherein said plate assembly comprises a lower sub-assembly and an upper sub-assembly removably assembled to each other, said lower sub-assembly including three plates jointly assembled to each other and constituted by said printed circuit board interposed between an insulating plate provided with an orifice for accommodating said contact member on said circuit board and a thickness plate adapted to be situated contiguous to the wall of said apparatus, said upper sub-assembly including a resilient membrane secured under a membrane-carrying plate having an aperture through which said contact member projects, said resilient membrane contacting and covering the concave portion of said contact member so as to removably maintain it in the orifice of said insulating plate.

4,439,647

TOUCHPAD KEYBOARD

Nick Calandrello, 7 Andover St., Andover, Mass. 01810; Robert Dimodana, 3 Lucy Ave., Pelham, N.H. 03076; Louis Skarbek, 153 Wilmington Rd., Burlington, Mass. 01803; Don Gove, 3 Highwood Rd., Manchester, Mass. 01944; Edwin Cooper, 143 Helvetia St., and John McKenzie, 11 Ellington Rd., both of Tewksbury, Mass. 01876

Filed Jul. 14, 1982, Ser. No. 398,374
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **7 Claims**



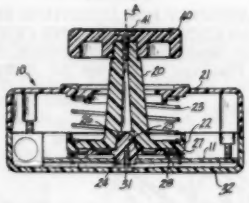
1. A keyboard comprising a printed circuit board, a plurality of spaced conductor pairs on a surface of said printed circuit board, a web of compressible material having one side abutting said surface of said printed circuit board and provided with apertures centered on said conductor pairs, a rigid disc comprising conductive material in each of said apertures and having a flat surface facing each of said conductor pairs, and means comprising a flexible plastic sheet covering the side of said web opposite said one side and connected to the sides of the discs opposite said flat surfaces for retaining said discs in said apertures at a position normally spaced from said printed circuit board, said discs being thinner than said web, whereby pressure on any of said discs in a direction toward said printed circuit board causes the flat surface of said one of said discs to move to a position abutting said printed circuit board and bridging said corresponding conductor pair.

4,439,648

JOYSTICK-TYPE CONTROLLER

Norbert L. Reiner, Wallingford, and Stephen M. Sledesky, East Hartford, both of Conn., assignors to Coleco Industries, Inc., Hartford, Conn.

Filed Jul. 28, 1982, Ser. No. 402,435
Int. Cl.³ H01H *25/04*
U.S. Cl. 200—6 A **5 Claims**



1. A controller for causing switch contact closures in response to X-Y coordinate movements, said controller comprising a housing, a substrate including an electrical circuit defined thereon supported in said housing, a handle having a longitudinal axis extending into said housing and having a lower annular flange extending radially therefrom, means in said housing supporting said handle thereon for pivotal movement radially of the axis of said handle, a plurality of switch contacts on said substrate and positioned in a predetermined angular pattern about the axis of said handle, said contacts being located on said substrate beneath said flange so that one of said contacts

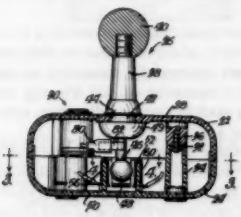
may be operated by said flange by tilt of said handle, a member having a plurality of cantilevered flexible arms extending between said contacts and said flange whereby tilting motion of said handle may cause said arms to engage one of said contacts, projections on said member, each projection associated with one of said arms and extending downwardly toward said substrate radially inwardly of the extremities of each of said arms, whereby when said handle is tilted to close one of said contacts after predetermined movement of one of said arms, the associated projection will bottom on said substrate and transfer force from said flange directly to said substrate through said projection.

4,439,649

JOY STICK SWITCH

Marino Cecchi, Itasca, Ill., assignor to Suncom, Incorporated, Northbrook, Ill.

Filed Aug. 30, 1982, Ser. No. 413,000
Int. Cl.³ H01H *25/04*
U.S. Cl. 200—6 A **17 Claims**



1. A joy stick assembly, comprising a housing having top, bottom and side walls and an opening through said top wall; a joy stick extending through said opening, said joy stick having a resilient member around a medial portion thereof secured to said top wall in said opening and pivotally mounting said joy stick therein and on said housing in said opening for pivotal movement within said opening in any direction throughout a 360° arc from an equilibrium position to an operative position and return and a member of electrically conductive material at a lowermost end thereof; and a plurality of contact elements of electrically conductive material on said housing bottom wall in an array in surrounding relationship to said conductive member, said conductive member being out of engagement with said contacts when said joy stick is in said equilibrium position and each said contact being engageable by said conductive member upon movement of said conductive member through an arcuate path as a function of pivotal movement of said joy stick away from said equilibrium position in a predetermined direction to electrically connect said conductive member and said contacts.

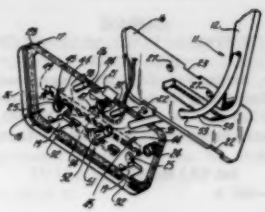
4,439,650

SWITCH ASSEMBLY FOR AUTOMOTIVE PEDAL CONSTRUCTION

William L. Brown, Southfield, Mich., assignor to John D. Leighton, Bloomfield Hills, Mich.

Filed Oct. 14, 1981, Ser. No. 311,191
Int. Cl.³ H01H *3/14*
U.S. Cl. 200—61.89 **8 Claims**

1. A signal mechanism for a pedal operated device comprising an actuating element for said device, a pedal pad detachably connected to said actuating element for limited relative movement thereto, first and second flexible electrical contacts supported by said pedal pad for movement relative to each other, means including a pair of elements associated with one of said electrical contacts and engageable with said actuating element for effecting relative movement of said contacts into



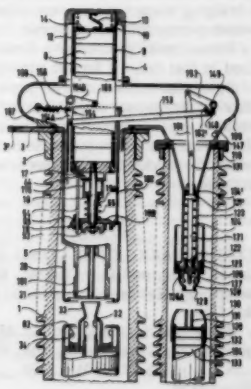
engagement to complete an electrical circuit upon movement of said pedal pad relative to said actuating element.

4,439,651

PRESSURIZED GAS CIRCUIT-BREAKER HAVING OPENING AND CLOSING RESISTORS

Edmond Thuries; Dante Nicoloso, and Doan Pham Van, all of Meyzieu, France, assignors to Alsthom-Atlantique, Paris, France

Filed Aug. 12, 1982, Ser. No. 407,410
Claims priority, application France, Aug. 26, 1981, 81 16291
Int. Cl.³ H01H *33/16*
U.S. Cl. 200—144 AP **2 Claims**



1. A pressurised gas circuit-breaker of the opening and closing resistor type and comprising, in a main insulative enclosure (1), a fixed contact (21, 101), a movable contact (32, 34, 62), a closing resistor (8) and a device (19) for inserting the closing resistor (8) in the form of a semi-movable contact (20) operatively engaging the movable contact (32, 34, 62), said circuit-breaker further comprising, in an auxiliary insulative enclosure (120), a movable auxiliary contact (121), a fixed auxiliary contact (131) and an opening resistor (133), the improvement wherein the circuit-breaker comprises a mechanism disposed in a casing (150) linking both enclosures (1, 120) and on the side of the fixed contact (21, 101), for moving the movable auxiliary contact (121), the mechanism comprising a link-crank assembly (152, 152') and at least one bell-crank lever having two arms (154A, 154B), said assembly and said bell-crank lever being pivoted to respective ends of at least one pushrod (153) with one of the pivots being made via a slot (148) in the pushrod, the crank (152) of the assembly being pivoted to the movable auxiliary contact, a return spring (158) acting on one arm (154A) of the bell-crank lever and the other arm (154B) being fitted with a roller (155) in contact with an extension (102) of

the semi-movable contact (20) for inserting the closing resistor (8).

4,439,652

CONTACT SYSTEM FOR GAS BLAST CIRCUIT BREAKERS

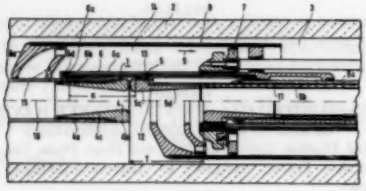
Helmut Beier, Berlin, Fed. Rep. of Germany, assignor to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,101

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126744

Int. Cl.³ H01H *33/70, 33/12*

U.S. Cl. 200—148 A 8 Claims



1. A contact system for a gas blast circuit breaker, comprising a nozzle-shaped fixed first contact piece; a coaxially mounted nozzle-shaped, axially movable second contact piece; a movable bridging contact piece common to both the first and second contact pieces; and driving means for driving the system from a contact make position to a contact break position; characterized in that there is further provided spring biasing means for urging the second contact piece against the first contact piece in the contact make position; and wherein the driving means comprises means for separating the bridging contact piece from the first contact piece during the break process, before the second contact piece is separated from the first contact piece.

4,439,653

CIRCUIT BREAKER OPERATING APPARATUS

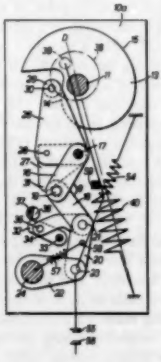
Hiroshi Umino, Inagi, and Ikuo Takano, Hachiouji, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 12, 1982, Ser. No. 357,660

Claims priority, application Japan, Mar. 19, 1981, 56-38668

Int. Cl.³ H01H *3/06*

U.S. Cl. 200—153 SC 8 Claims



1. A circuit breaker operating apparatus, comprising:

(a) a frame;

(b) a rotatable closing shaft attached to said frame;

(c) first means disposed on one end of said closing shaft for rotating said closing shaft only in one direction;

(d) second means disposed on the other end of said closing shaft for rotating said closing shaft only in said one direction, and alternately with said first means;

(e) a closing cam secured to said closing shaft for rotation therewith;

(f) spring means having one end secured to said frame and another end secured to said closing cam at a point spaced from said closing shaft, whereby the rotation of said closing cam up to a specified angle charges closing energy within said spring mean and rotation of said closing cam beyond said specified angle discharges closing energy charged within said spring mean;

(g) a linkage having one end operatively associated with said closing cam for movement in response to the rotation of said closing cam in a first direction;

(h) a coupling shaft disposed on said frame and coupled to the other end of said linkage for rotation in a first direction in response to rotation of said closing cam in said first direction;

(i) tripping means operating in response to a command based upon occurrence of overcurrent or abnormalities, said tripping means operatively connected to said coupling shaft such that operation of said tripping means rotates said coupling shaft in a second direction, opposite to said first direction; and

(j) contacts movable between an open and a closed position in response to rotation of said coupling shaft, said contacts being closed by rotation of said coupling shaft in said first direction and opened by rotation of said coupling shaft in said second direction; whereby;

(k) rotation of said closing cam beyond said specified angle causes said spring means to discharge closing energy charged therein, causing said coupling shaft to rotate in said first direction, thereby moving said contacts into the closed position, and

(l) operation of said tripping means causes said coupling shaft to rotate in said second direction, thereby moving said contacts into the open position.

4,439,654

WATERPROOF CONTROL KNOB ASSEMBLY WITH INTEGRAL SWITCH

Mark S. Bresin, Coral Springs, and Peter B. Gilmore, Miami, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1982, Ser. No. 426,334

Int. Cl.³ H01H *13/06, 19/28*

U.S. Cl. 200—302.1 11 Claims

1. A rotatable waterproof control knob assembly including an integral momentary contact switch, comprising:

a conductive inner shaft having a longitudinal axis and an upper and a lower portion;

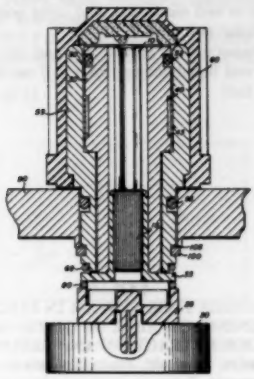
a conductive outer shaft concentric with said inner shaft and having an upper and a lower portion corresponding to said upper and lower portions respectively of said conductive inner shaft;

means for electrically isolating but mechanically coupling said inner and outer shafts to permit simultaneous concentric rotation of said inner and outer shafts about said longitudinal axis;

a flexible shroud having a top covering and sealing the upper portions of said inner and outer shafts to provide a water barrier for prevention of water entry between said inner and outer shafts at said upper portions of said inner and outer shafts; and

switch contact means, located adjacent said shroud and said upper portions of said inner and outer shafts, for electrically coupling said inner and outer shafts together when

the top of said shroud is flexed toward said upper portions of said inner and outer shafts;



whereby, said momentary switch may be actuated without longitudinal motion of said inner and outer shafts.

4,439,655

PUSH BUTTON FOR ELECTRICAL SWITCH

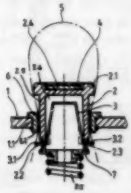
Ephraim Borter, Buchrain, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Oct. 18, 1982, Ser. No. 434,927

Claims priority, application Switzerland, Nov. 6, 1981, 7103/81

Int. Cl.³ H01H *3/12*

U.S. Cl. 200—340 **2 Claims**



1. A push button, especially for an electrical switch, and which is capable of being guided and retained in a cove plate and can be manually actuated against the force of a push-out spring, comprising:

a push button body;

said push button body being provided with a rigid front flange for limiting an actuation path of the push button;

a rear impact member provided for the push button body for limiting a push-out path of the push button out of the cover plate;

said rear impact member comprising at least two impact detents which are slightly resiliently yieldable;

said impact detents being arranged at opposite sides of the push button body;

said impact detents possessing impact surfaces extending substantially parallel to the cover plate;

said push button body has a hollow space;

a substantially U-shaped blade spring arranged in said hollow space of the push button body;

said substantially U-shaped blade spring having a leg member defining at least one of said impact detents;

said leg member being bent essentially at right angles out of said substantially U-shaped blade spring; and

said push button body having a substantially transversely extending slot through which emerges said leg member out of said push button body.

4,439,656

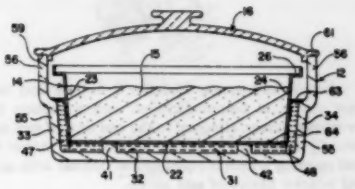
APPARATUS AND METHOD FOR THE RECONSTITUTION OF FROZEN FOODS IN A MICROWAVE OVEN

Yigal Peleg, Solon, Ohio, assignor to The Stouffer Corporation, Solon, Ohio

Continuation of Ser. No. 251,501, Apr. 6, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,446

Int. Cl.³ H05B *6/64*

U.S. Cl. 219—10.55 E **8 Claims**



1. In a microwave oven, an apparatus for the reconstitution of frozen foods, such foods being contained in a metallic tray having a bottom wall and continuous side walls of a given height, comprising:

a tray holder of microwave transparent material having a bottom wall and side walls defining a cavity similar in shape to said tray;

spacer means for supporting said tray in said tray holder cavity such that said tray bottom is uniformly spaced from said tray holder rigid bottom wall a distance between one-sixteenth inch and five-sixteenth inch and said tray side walls are spaced from said tray holder side walls throughout said given height and are uniformly spaced from said tray holder side walls a distance between one-sixteenth inch and five sixteenth inch for at least half said tray side walls given height, said tray holder side walls extending above said tray side walls, the space between said tray and said cavity being filled with a microwave absorbing liquid to at least half said tray side walls given height and;

a cover engaging the tops of said tray holder side walls, whereby the space above said tray is in communication with said space between said tray and said cavity.

4,439,657

APPARATUS FOR HIGH TEMPERATURE TREATMENT OF RECTILINEAR-GENERATRIX SURFACES OF NONCONDUCTIVE PRODUCTS

Vladimir D. Shimanovich; Andrei K. Shipai, both of Minsk; Vladimir G. Davydenko, Mogilev; Leonid I. Kiselevsky, Minsk; Sergei G. Korotkevich, Minsk; Nelli I. Lipnitskaya, Minsk; Vyacheslav P. Machnev, Minsk; Anatoly I. Zolotovsky, Minsk; Vladislav G. Moskovsky, Minsk, and Nikolai N. Naumenko, Minsk, all of U.S.S.R., assignors to Institut Fiziki Akademii Nauk Belorusskoi SSR, Minsk, U.S.S.R.

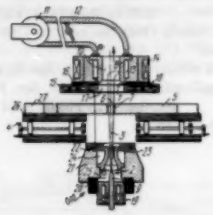
Filed Jul. 30, 1979, Ser. No. 62,180

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—121 PR **14 Claims**

1. An apparatus for high temperature treatment of rectilinear-generatrix surfaces of nonconductive products, comprising a plasma generator having an anode arranged opposite to a cathode to create therebetween an arc gap exceeding the length of a generatrix of the surface being treated, said cathode being mounted in a fixed position, and said anode being mounted integrally with said cathode to maintain a fixed position of the arc axis within said arc gap; and a product feeding

device to move said product a desired distance from the arc axis in a plane extending normally to the arc axis when the generatrix of the surface being treated is parallel to the arc axis; means for moving an arc contact spot over the surface of said anode; means for displacing said arc contact spot along the arc



axis; wherein said anode includes a hollow rod having an interior cavity in communication with a suction device; a water-cooled screen attached to the end face of said anode and electrically insulated from said anode, said screen having a central opening which is equal to and coaxial with an opening of said interior cavity of said anode.

4,439,658

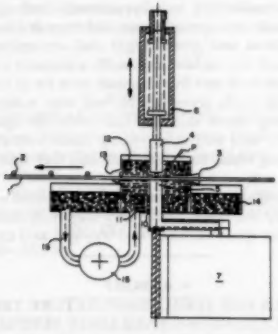
APPARATUS FOR PRODUCING WELDED WIRE GRIDS

Gerhard Schmidt; Klaus Ritter; Gerhard Ritter; Hans Gött, and Josef Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungs Gesellschaft m.b.H., Graz, Austria

Division of Ser. No. 166,299, Jul. 7, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,417

Int. Cl.³ B23K *11/32*

U.S. Cl. 219—56 **2 Claims**



1. Apparatus for use in an electrical resistance welding method for producing welded grids from longitudinal and transverse metal wires crossing one another, wherein said wires are fed between rows of paired cooperating electrodes and are welded together under pressure at the points where said wires cross by means of an electrical current, and in which the resulting cross points of said wires and said associated electrodes are subjected to the action of a liquid coolant,

comprising in combination

first and second tanks, each having sidewalls and an upper boundary formed by upper edges of respective of said sidewalls, said first tank being a catcher tank for said liquid coolant and being open at the top;

guides for guiding said longitudinal wires of said grid through said apparatus, said guides being positioned above said upper boundary of said catcher tank, said upper boundary of said second tank lying above said guides for said longitudinal wires, said sidewalls of said second tank having openings for receiving said guides and an outlet slit for said welded grid;

a pump for conveying said liquid coolant from said catcher tank up to said electrodes, said cross points lying above said catcher tank, and

a pipe connecting said second tank and said pump for conveying said liquid coolant from said catcher tank to said second tank.

4,439,659

ELECTRODE FEED SYSTEM IN ELECTRICAL MACHINING, CAPABLE OF QUICK-RESPONSE ELECTRODE RETRACTION AND RECIPROCATION

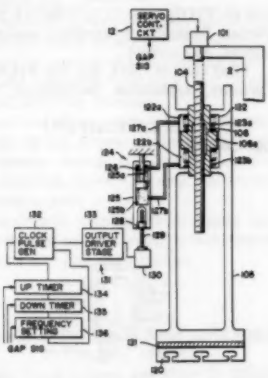
Akihiko Shimizu, Kawasaki, Japan, assignor to Japax Incorporated, Kanagawa, Japan

Filed Jan. 12, 1982, Ser. No. 338,902

Claims priority, application Japan, Jan. 14, 1981, 56-3235

Int. Cl.³ B23P *1//14*

U.S. Cl. 219—69 V **12 Claims**



1. An electrode feed system for use in effecting electrical machining between a working electrode and a workpiece electrode across a machining gap, said system comprising:

an axially movable electrode head for securely supporting one of said electrodes;

a feed screw extending into said electrode head and drivingly coupled with an electric motor for rotation therewith;

a driver circuit for providing a drive signal to rotate said motor;

a feed nut in mesh with said feed screw in said electrode head and restrained from rotation therein for axially moving said head when said feed screw is rotated in response to said drive signal applied to said motor, thereby displacing said one electrode to follow the progress of elctrical machining in said machining gap;

a cylinder formed within said electrode head and having said feed nut slidably received therein for axial movement relative thereto, said nut being constructed and arranged to define a pair of separate chambers in said cylinder; and

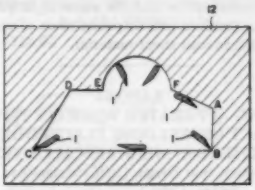
reciprocation pump means for alternately pressurizing said two separate chambers in said cylinder with a pressure fluid, thereby axially reciprocating said electrode head.

4,439,660

ELECTROEROSIVE CONTOUR-MACHINING METHOD AND APPARATUS WITH A ROTARY TOOL ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 2, 1982, Ser. No. 345,050
Claims priority, application Japan, Feb. 3, 1981, 56-13829
Int. Cl.³ B23P 1/12
U.S. Cl. 219—69 M 2 Claims



1. A method of electroerosively machining a contour in a workpiece, comprising the steps of:

(a) supporting said workpiece on a movable worktable to lie in an X-Y plane,

(b) supporting a tool electrode having on its lateral periphery a plurality of divided machining electrode surfaces with a tool support so that each of said divided machining surfaces extends orthogonal to said X-Y plane and said tool electrode is rotatable about an axis extending in parallel with said surfaces;

(c) positioning said tool electrode by rotating said tool support about said axis to establish a predetermined angular orientation of the tool electrode relative to a predetermined angular position whereby at least a portion said electrode surfaces is brought into a machining relationship with said workpiece;

(d) electroerosively removing material from at least a portion of said workpiece juxtaposed with said portion of said surfaces while moving said worktable to displace said workpiece in said X-Y plane so that said portion of the electrode surfaces moves along a portion of said contour in said workpiece;

(e) angularly repositioning said tool electrode through rotation of said tool support about said axis to alter angular orientation of said tool electrode whereby at least another portion of said surfaces is brought into a machining relationship with said workpiece, and effecting step (d) so that said other portion of the electrode surfaces moves along a subsequent portion of said contour in said workpiece; and

(f) repeating step (e) to sequentially machine successive portions of said contour in said workpiece.

4,439,661

APPARATUS AND METHOD FOR DOUBLE END STUD WELDING

Thomas E. Doyle; Daniel Hauser, both of Columbus; Martin, David C. Worthington, all of Ohio, and Michael D. Hayes, Minas Gerais, Brazil, assignors to KSM Fastening Systems Inc., Moorestown, N.J.

Continuation-in-part of Ser. No. 95,322, Nov. 19, 1979, Pat. No. 4,339,653. This application May 19, 1981, Ser. No. 265,239
Claims priority, application Canada, Nov. 18, 1980, 364898
Int. Cl.³ B23K 9/20
U.S. Cl. 219—99 15 Claims

1. The method of simultaneously stud welding the ends of a multi-ended metallic stud to a metallic base member comprising the steps of:

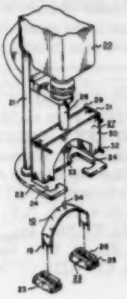
providing on each end of the stud at least one elongate relatively thin metallic extending projection;

applying a controlled pressure upon the stud in the direction of the base member;

applying an electrical potential to the stud from a continuous current power supply;

bringing the metallic projections into contact with the metallic base member; and

controlling the pressure on and the rate of advance of the stud toward the workpiece and controlling the electrical potential upon the stud all in proportion to one another and to the configuration of the projections and stud ends



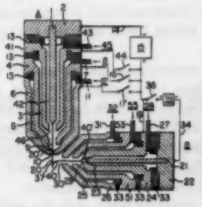
to (1) provide a current density in the projections to essentially immediately and simultaneously disintegrate the projections to establish arc initiation at all ends of the metallic stud and (2) thereafter maintain a continuous arc at all ends of the metallic stud of duration and current density at least equaling that of drawn arc stud welding to maintain molten metal at each end thereof until the ends of the stud come into contact with the base material.

4,439,662

METHOD OF OPERATING A PLASMA GENERATING APPARATUS

Haruo Tateno, Kiyose, Japan, assignor to Rikagaku Kenkyusho, Japan

Division of Ser. No. 124,938, Feb. 26, 1980, Pat. No. 4,341,941. This application Sep. 30, 1981, Ser. No. 307,312
Claims priority, application Japan, Mar. 1, 1979, 54-23629; Mar. 1, 1979, 54-23630
Int. Cl.³ B23K 9/00
U.S. Cl. 219—121 PY 6 Claims



1. A method of operating a plasma generating apparatus that includes a single-plasma torch structure comprising a torch unit having a center electrode and having inner and outer concentric bushings disposed about the electrode so as to define inside and outside annular channels for the passage of gas, the method comprising providing a gas flow rate through the inside channel that is equal to or greater than a critical gas flow rate, and adjusting the gas flow rate through the outside channel such that a predetermined ratio of gas flow rate through the inside channel to gas flow rate through the outside channel is afforded, said critical gas flow rate and said ratio being determined from the valley of a curve representing the

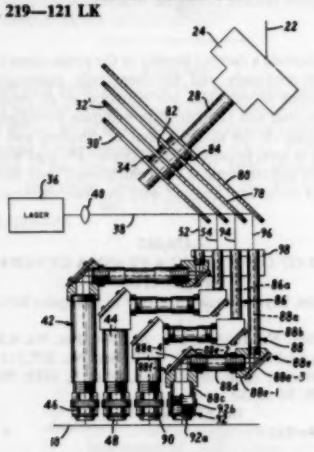
thermal loss of the outer bushing as a function of gas flow rate through the inside channel, said curve being determined by operating said torch unit as a Positive Polarity Torch and another similar torch unit as a Reverse Polarity Torch in a dual-plasma torch structure, establishing a hairpin arc between the Positive Polarity Torch and the Reverse Polarity Torch, providing a total gas flow rate through the inside and outside channels of the Positive Polarity Torch such that the arc is in alignment with a central axis of such torch, varying the gas flow rate through the inside channel while maintaining constant the total gas flow rate, and measuring said thermal loss as a function of the gas flow rate through the inside channel.

4,439,663

METHOD AND SYSTEM FOR LASER PERFORATION OF SHEET MATERIAL

A. Clifton Lilly, Jr., Richmond; Warren E. Claflin, Bon Air; Edward B. Stultz, Richmond; Ulysses A. Brooks, Glen Allen, and Peter Martin, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 932,566, Aug. 10, 1978, abandoned.
This application Jul. 24, 1981, Ser. No. 286,635
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LK **7 Claims**



1. A method of forming plural spaced rows of spaced uniform perforations in sheet material, comprising:

(a) projecting an initial beam of light energy from a laser through a lens;

(b) establishing a conveyance plane for said sheet material;

(c) deriving in time succession from said initial beam, a plurality of spaced beams each having an axis of symmetry parallel, at derivation, to the axes of symmetry, at derivation, of the other spaced beams and perpendicular, at derivation, to the conveyance plane, said derived beams having unequal cross-sectional expanse;

(d) establishing a separate light path for each spaced beam from its point of derivative to the conveyance plane such that the distance from the lens to the conveyance plane is the same for each spaced beam so that the cross-sectional areas of said spaced beams at their respective points of contact with said conveyance plane are equivalent and such that the axis of symmetry of each said spaced beam at its point of contact with the conveyance plane is perpendicular thereto and is parallel to the axes of said other spaced beams at their respective points of contact with said plane;

(e) conducting each said spaced beam along its respective light path such that each spaced beam contacts the conveyance plane at a location on the surface of said plane spaced apart from the locations at which the other spaced beams contact the conveyance plane;

(f) passing each modified beam through an issue focus element located at a point in its light path proximate the conveyance plane to focus the beam at a point on the conveyance plane;

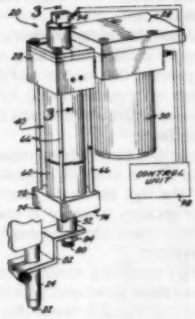
(g) conveying said sheet material past the points at which said beams are focused on the conveyance plane so that, as said sheet material is conveyed past said points, the time successive derivation and the equal light path lengths of said beams result in plural spaced rows of spaced uniform perforations in said sheet material.

4,439,664

WELDING APPARATUS WHEREIN PHYSICAL CONTACT OF WELDING ELECTRODE WITH WORKPIECE IS MECHANICALLY SENSED

William J. Toohey, San Diego, Calif., assignor to Jetline Engineering, Inc., Irvine, Calif.

Filed Apr. 26, 1982, Ser. No. 372,193
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.02 **21 Claims**



1. A welding apparatus comprising:

first means adapted for carrying an electrode operatively connected to a power source capable of generating a welding arc between the electrode and a workpiece, in either direction towards or away from the workpiece;

motor means operatively connected with the first means for providing motive power to the first means, the motor means being controllable to move the first means to carry the electrode towards the workpiece, and alternatively to move the first means to carry the electrode away from the workpiece;

sensing and control means including switch means operatively associated with the first means for causing the first means to trip the switch means substantially when the electrode physically contacts a solid body such as a workpiece, and for causing the motor means to reverse movement of the first means for a predetermined time period, whereby after the electrode contacts the workpiece the electrode is carried away by the first means to a predetermined distance from the workpiece; and

housing means relative to which the motor means are fixedly mounted, and wherein the first means comprise a lead screw and threaded sleeve assembly, the lead screw being rotatably mounted in a bearing incorporated in the housing means and being mechanically connected to the motor to be driven thereby, the threaded sleeve being mounted on the lead screw to move longitudinally relative to the lead screw when said lead screw is rotated, the threaded sleeve being adapted for carrying the electrode, the lead screw having an upper end, the lead screw and the bearing comprising means for allowing the upper end of the lead screw to move in a direction opposite to the motion of the

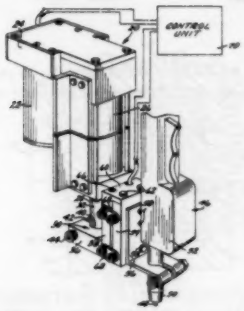
threaded sleeve towards the work surface and therethrough for tripping the switch means.

4,439,665

ARC WELDING APPARATUS HAVING PIVOTABLY MOUNTED ELECTRODE CARRIAGE

William L. Arter, Fullerton, Calif., assignor to Jetline Engineering, Inc., Irvine, Calif.

Filed Apr. 26, 1982, Ser. No. 372,195
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.02 **16 Claims**



1. A welding apparatus comprising:

a motor capable of providing a rotational power output in either direction;

translatory motion means operatively connected with the motor and driven thereby for moving in either direction towards or away from a workpiece, the direction of movement of the translatory motion means being dependent on the direction of rotational power output of the motor;

electrode-carrying means adapted for carrying a welding electrode capable of being coupled to a power source to provide an electric arc between the electrode and the workpiece, the electrode-carrying means being carried by the translatory motion means to travel therewith towards or away from the workpiece;

mounting means operatively associated with the electrode-carrying means and with the translatory motion means for normally maintaining the electrode-carrying means in a first position relative to the translatory motion means and for allowing the electrode-carrying means to move into a second position relative to the translatory motion means when the translatory motion means are carrying the electrode-carrying means towards the workpiece and the workpiece is physically contacted by the electrode;

said mounting means being adapted for mounting the electrode-carrying means to the translatory motion means for a limited pivotable motion relative thereto, the electrode-carrying means being gravity biased to the first position, and comprising a plurality of linkage arms, each linkage arm being mounted to the translatory motion means for at least limited pivoting motion relative thereto and to the electrode-carrying means for at least limited pivoting motion relative thereto, whereby the electrode-carrying means are capable of limited pivoting motion relative to the translatory motion means, and whereby the first position of the electrode-carrying means is an extreme pivotable position allowed by the mounting means which the electrode-carrying means are gravity biased to occupy; and

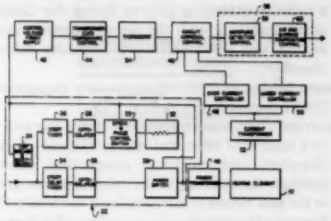
switch and control means operatively associated with the electrode-carrying means for being tripped when the electrode-carrying means are moved from the first position to the second position and for reversing the rotational power output of the motor for a predetermined time period after the switch means are tripped.

4,439,666

ELECTRICAL HEATING SYSTEM

Charles H. Graham, Salt Lake City, Utah, assignor to Intermountain Thermafloor, Salt Lake City, Utah

Filed Oct. 7, 1981, Ser. No. 309,550
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—213 **18 Claims**



1. An electrical heating system for use in heating surfaces, said heating system comprising:

a low voltage heating element positioned substantially parallel to and adjacent the surface to be heated, said heating element comprising a nonferrous, thermally conducting mesh screen, said screen having a mesh density such that the total surface area of the mesh screen is at least substantially equal to the area of that portion of the surface to be heated which is within a perimeter defined by the edges of said screen;

an alternating current power source; and

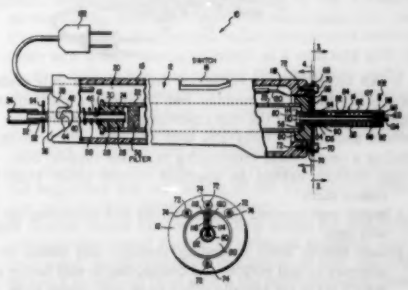
means for connecting the power source to the heating element so as to substantially eliminate transmission of power surges onto the heating system.

4,439,667

DESOLDERING DEVICE AND IMPROVED HEATER ASSEMBLY THEREFOR

Frank Sylvia, Columbia, Md., assignor to Pace Incorporated, Laurel, Md.

Filed Jul. 11, 1980, Ser. No. 168,804
Int. Cl.³ H05B *3/02*; B23K *3/04*
U.S. Cl. 219—230 **21 Claims**



1. A desolderer comprising:

a tubular sleeve having external flange means disposed a predetermined distance from one end of the sleeve and wherein the portion of the sleeve between said one end and the flange means defines a seal disposition surface having an opening therein;

a heating wire disposed within said sleeve;

a hollow handle having a forward end, said flange means

being secured to the forward end of said handle with said portion of the sleeve extending into the handle;

a tubular solder collector chamber open at one end and disposed within said handle and adapted to have a vacuum created therein;

a tubular tip heated by the heating wire so that the tip can melt solder;

means for providing a path for the molten solder from said tip to said solder collection chamber;

a compressible seal means disposed around said sleeve at said seal disposition surface between said solder collection chamber and said flange means, said seal means including a radially extending groove facing the flange means and communicating with the sleeve opening, said seal means sealing said open end of the tubular solder collection chamber;

means biasing said sealing means into engagement with said flange means; and

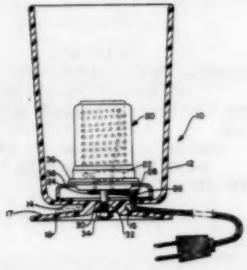
electrical connecting means for connecting said heating wire to a source of electrical energy outside of said collection chamber, said electrical connecting means extending through the opening in the tubular sleeve and the groove in the seal means as it passes from the inside of said tubular sleeve to the outside of said solder collection chamber, the sealing means being compressed by the biasing to such an extent that the groove closes about the electrical connecting means to block the passage of air therethrough.

4,439,668

PEDESTAL TYPE ELECTRO-HEATED CONTAINER

Alton R. Wells, 4573 W. Trade Winds Ave., Lauderdale-by-the-Sea, Fla. 33308

Filed Aug. 26, 1982, Ser. No. 411,849
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—438 **1 Claim**



1. An electro-heater container comprising a cup made of electrically insulative material and including a bottom and a support pedestal for the cup extending downwardly from said bottom and formed integrally with the cup, said pedestal including a center stem terminating in a base support disc,

said bottom having an aperture therein offset from said center stem,

a heater unit secured to said bottom and extending up into said cup,

power supply leads extending through and sealed in the aperture in said bottom and connecting to said heater unit, which leads are radially offset from said center stem, said heater unit and power supply leads being electrically insulated;

said support disc having a bottom surface that is concave in vertical section,

means securing said heater unit to said bottom extend through said center stem and include a portion received in the concave portion of said support disc;

said center stem vertically separates said base support disc from said bottom and several convolutions of said leads can be stored on said center stem; and

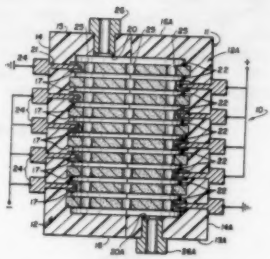
a support ring engaging said heater unit and positioning it on said bottom, said support ring being in tight engagement with said cup and said heater unit; and said aperture is within the periphery of said ring.

4,439,669

INSTANTANEOUS ELECTRODE-TYPE WATER HEATER

Louis Ryffel, 332 Blue Hill Ter., Wyckoff, N.J. 07481

Filed Nov. 1, 1982, Ser. No. 438,451
Int. Cl.³ H05B *3/60*; F22B *1/30*
U.S. Cl. 219—289 **3 Claims**



1. An instantaneous electric hot water heater comprising: an electrically non-conductive housing formed of two identical complementary members, each of which is provided with sidewall means open at one side and end walls, said sidewall means having spaced apart grooves formed on the interior surfaces thereof parallel to said end walls and apertures extending through said sidewall means into alternate ones of said spaced apart grooves, and one end wall having a port formed therein, one of said members being inverted and joined to the other member with open sides thereof facing each other to form a water-tight hollow housing having a port in each of the opposite ends thereof and in which the grooves formed in each member are aligned and form a plurality of spaced apart continuous grooves on the interior surface of said housing; a plurality of electrodes extending transversely across the interior of said housing, each such electrode being supported in a different groove of said plurality of continuous grooves formed in said housing and being adapted to make electrical contact with an electrical connector projecting through an aperture in the sidewall of said housing into the groove, each electrode being provided with a plurality of apertures for the passage of water through the electrode; and a plurality of electrical connector means, one for each of said electrodes, each of said connector means projecting through an aperture formed in the sidewall means of said housing into the edge of a different electrode.

4,439,670

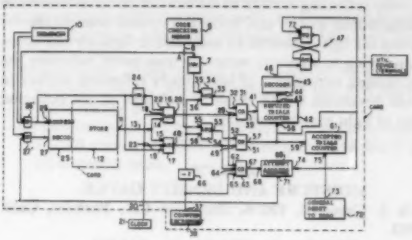
METHOD AND DEVICE FOR THE CHECKING OF THE NUMBER OF ACCESS ATTEMPTS TO AN ELECTRONIC STORE, NOTABLY THAT OF AN INTEGRATED CIRCUIT OF AN OBJECT SUCH AS A CREDIT CARD OR A BUYER'S CARD

Jean-Claude Basset, and Guy Belenfant, both of Paris, France, assignors to Electronique Marcel Dassault, Paris, France

Continuation of Ser. No. 211,969, Dec. 1, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,697
Claims priority, application France, Nov. 30, 1979, 79 29587
Int. Cl.³ G06K *5/00*
U.S. Cl. 235—382 **9 Claims**

1. A data bearing card or the like for gaining access to a utilization device, the card comprising means for storing an

identification code which is interrogated for validity during an access attempt, said card further comprising permanent re-



cording means of all valid and invalid access attempts and of the indication resulting from such respective attempts.

4,439,671

MAGNETORESISTANT TRANSDUCTION DEVICE FOR READING LOW DENSITY CODED DATA

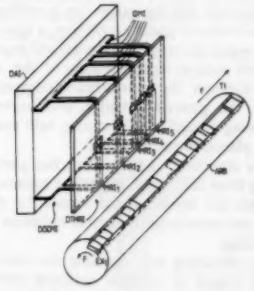
Michel Helle, Marcq, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 9, 1982, Ser. No. 356,432

Claims priority, application France, Jun. 19, 1981, 81 12071

Int. Cl.³ G06K *7/08*

U.S. Cl. 235—449 **8 Claims**



1. A magnetoresistant transduction device for reading coded data, comprising a plurality of magnetoresistances having a larger dimension and and adapted to be disposed opposite the coded data and to be aligned with each other in the direction of their larger dimension, a magnetization device for generating a magnetic field having a value at each of the magnetoresistances which is a function of the coded data placed opposite the corresponding magnetoresistance, a grid of non-remanent magnetic material having a a plurality of parallel focusing elements arranged between the magnetization device and the magnetoresistances, each focusing element being associated with only one magnetoresistance and each focusing element carrying the magnetic field generated by the magnetization device to and focusing the magnetic field on its associated magnetoresistance, such that the magnetic fields acting on the magnetoresistances are independent from each other.

4,439,672

CONTROL SYSTEM FOR AUTOMATED MANIPULATOR DEVICE

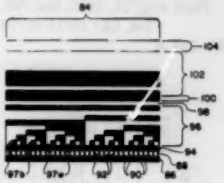
Roy G. Salaman, Boulder, Colo., assignor to Lord Electric Company, Inc., New York, N.Y.

Continuation of Ser. No. 132,272, Mar. 20, 1980. This application Jul. 29, 1982, Ser. No. 402,994

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131276

Int. Cl.³ G01F *7/10*

U.S. Cl. 235—463 **16 Claims**



1. In an automated device operative to move along at least one movement track and having motor means for moving the automated device along the movement track, an improved control system for controlling the movement and position of the automated device along the movement track comprising:

means defining a chart having a width and a length and stationarily positioned transversely adjacent the movement track along a predetermined operative portion of the movement track over which the automated device is to be movably controlled, the length of the chart extending along the movement track and the width of the chart extending transversely with respect to the movement track, said chart having a radiation reflective code extending across a portion of the width of the chart and along the operative length of the chart which defines the length of the chart and hence the operative portion of the movement track into a plurality of distance increments, the code further defines each distance increment by a unique predetermined pattern of radiation reflected from the code at each distance increment;

radiation source means for emanating radiation onto the chart at a position adjacent the automated device as the automated device moves along the movement track, the radiation reflected from the code at each distance increment defining the predetermined pattern of reflected radiation unique to that distance increment;

camera means attached to and carried by the automated device during movement along the movement track relative to the chart, said camera means receptive of radiation from said source means reflected in a scanning path extending fully across and beyond the transverse width of the chart to assure reception of the predetermined pattern of radiation reflected from the code at each distance increment under conditions of shifts in transverse position of the chart relative to the movement track;

a part of said code including means reflectively indicative of the beginning and the ending of the transverse width of the code at each distance increment;

said camera means further including means for converting each predetermined pattern of reflected radiation into an increment signal uniquely indicative of the particular distance increment from which the predetermined pattern of reflected radiation was reflected; and

processor means including a memory and an input control means for entering into said memory at least one information signal, each information signal corresponds to an increment signal corresponding to a distance increment along the operative portion of the track, said processor means being connected to said camera means to receive each increment signal from said camera means, said pro-

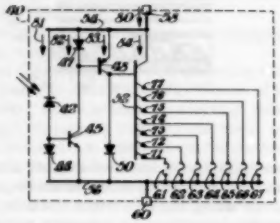
cessor means further operatively controlling said motor to move said automated device along the movement track in predetermined relation to the information signal and each increment signal supplied by said camera means.

4,439,673

TWO TERMINAL INTEGRATED CIRCUIT LIGHT-SENSOR

Walter S. Gontowski, Jr., Thompson, Conn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 27, 1981, Ser. No. 296,748
Int. Cl.³ H01J 40/14
U.S. Cl. 250—214 A **7 Claims**



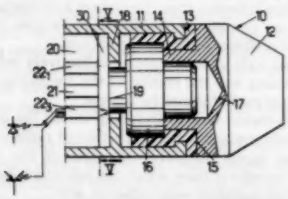
1. An integrated circuit light sensor comprising a die portion of a silicon wafer having formed thereat (a) a pair of terminal conductors; (b) a photo-diode; (c) a current-mirror amplifier; and (d) a conductive buss means for delivering electrical energy to said photo-diode and to said amplifier from said pair of terminal conductors, for connecting said photo-diode to the input of said current-mirror amplifier and for connecting the output branch of said current-mirror amplifier directly between said terminal conductors so that from said pair of terminal conductors said integrated circuit light sensor behaves like a simple photo-diode that may have an unusual combination of small size and a high stable sensitivity.

4,439,674

PREHENSION UNIT AND MANIPULATOR APPARATUS INCLUDING OPTICAL SENSORS

Philippe Amberny, Savigny en Septaine, and Michel O. de Mendez, Montlhery, both of France, assignors to Souriau et Cie and Societe d'Etudes et Applications Techniques S E A T, both of, France

Filed Jul. 6, 1981, Ser. No. 280,779
Claims priority, application France, Jul. 4, 1980, 80 15009
Int. Cl.³ A61F 1/06; G02B 5/14
U.S. Cl. 250—227 **9 Claims**



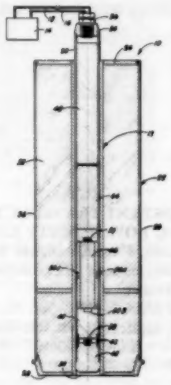
1. A prehension unit having a rigid body; a contact element supported by said body through resiliently deformable means which biases said contact element toward a rest position and cooperating with said body to define a closed space; a plurality of optical sensors carried by said body and cooperating with locally light reflecting surface means on said contact element, wherein said sensors comprise optical fiber means for transmitting light from a remote transducer to an end portion of said optical fiber means terminating in said supporting body in front of a locally reflecting surface of the contact element transverse to a longitudinal axis of said body and optical fiber means for collecting the light reflected by said surface through said space and conveying to a remote receiving transducer, whereby the forces causing movements of said locally reflecting surface in different directions which result in a change of the collected amount of light may be detected.

4,439,675

MOISTURE AND DENSITY GAUGE

Patrick J. Campbell, 130 S. Buchanan Cir., Pacheco, Calif. 94553

Filed Sep. 21, 1981, Ser. No. 304,563
Int. Cl.³ G01V 5/00
U.S. Cl. 250—253 **9 Claims**



1. A moisture and density gauge for a medium having, in combination, a source of gamma radiation, a source of neutron radiation, and means for receiving signals and transforming the received signals into a representation of the moisture and density of the medium, the improvement comprising:

a. a casing, the gamma radiation and neutron radiation sources being placed in said casing, said casing intended for being placed in the medium;

b. means for detecting and signaling the gamma radiation emanating from the source of gamma radiation after interaction with the medium, said means for detecting and signaling the emanation of gamma radiation being placed in said casing;

c. means for detecting and signaling the neutron radiation from said source of neutron radiation after interaction with the medium, said means for detecting and signaling the radiation of neutrons after interaction with the medium being placed in said casing between said means for detecting and signaling the gamma radiation and the source of gamma radiation, said signals representing the detected neutron and gamma radiation being transmitted to the means for receiving signals.

4,439,676

NATURAL GAMMA RAY LOGGING WITH BOREHOLE EFFECT COMPENSATION

Harry D. Smith, Jr., and Dan M. Arnold, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,937
Int. Cl.³ G01V 5/00
U.S. Cl. 250—256 **14 Claims**

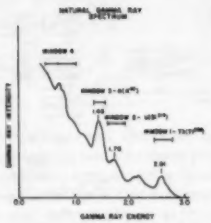
1. A method of natural gamma ray logging of subsurface formations adjacent a well borehole with a detector in a sonde,

while compensating for the effects of borehole conditions on the logging, comprising the steps of:

(a) measuring natural gamma radiation from the formation in a first energy window containing the 2.61 MeV thorium energy peak;

(b) measuring natural gamma radiation from the formation in a second energy window containing the 1.76 MeV uranium energy peak;

(c) measuring natural gamma radiation from the formation in a third energy window containing the 1.46 MeV potassium energy peak;



(d) measuring natural gamma radiation in the formation in a fourth energy window differing at least in part from the other three energy windows; and

(e) obtaining from the gamma radiation measured in the four energy windows and stripping constants from calibration formations a compensating function indicative of the effects of borehole conditions on the gamma radiation measured;

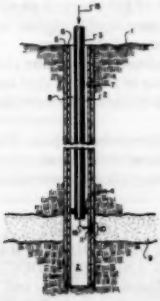
(f) adjusting the measured natural gamma radiation for different borehole conditions based on the compensating function.

4,439,677

WELLBORE FRACTURE TRACING

F. Glenn Martin, Irving, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 5, 1981, Ser. No. 318,511
Int. Cl.³ G01V 5/04
U.S. Cl. 250—260 **4 Claims**



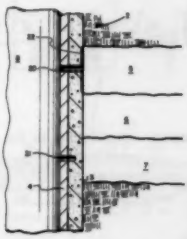
1. A method for determining the vertical extent of a fracture in a wellbore wall comprising providing a fluid loss control composition which carries one or more materials designed to enter into the interior of said fracture without plugging said fracture to form a filter cake on at least one interior wall inside said fracture, at least one of said filter cake forming materials being radioactively tagged, injecting said fluid loss control composition into said wellbore in the vicinity of said fracture to build up a filter cake inside said fracture along the internal vertical height of said fracture, and running a nuclear log survey in said wellbore to determine the vertical extent of said filter cake, thereby determining the vertical extent of said fracture.

4,439,678

WELLBORE TREATMENT

F. Glenn Martin, Irving, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 14, 1981, Ser. No. 330,068
Int. Cl.³ G01V 5/00
U.S. Cl. 250—260 **4 Claims**



1. A method for determining the success of a multiple perforation operation in a wellbore wherein at least two geologic formations were to be put into fluid communication with said wellbore by way of at least two sets of perforations, wherein said method locates perforations that did not establish such communication and therefore require reperforating, said method comprising providing a fluid loss control composition which carries one or more materials designed to form a filter cake on said wellbore wall, at least one of said filter cake forming materials being radioactively tagged, injecting said fluid loss control composition into said wellbore and into said perforations to build up a filter cake on the wellbore wall behind each set of perforations, and running a nuclear log survey in said wellbore to determine which of said sets of perforations were sufficiently open to establish a filter cake buildup on the wall of the wellbore and which of said sets of perforations were not sufficiently open to establish a filter cake buildup and therefor require reperforating.

4,439,679

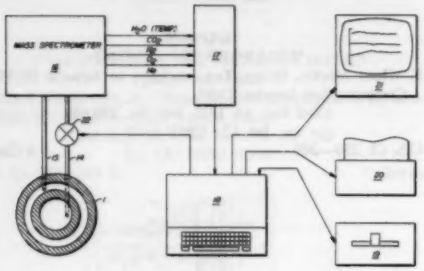
TRANSCUTANEOUS GAS TENSION MEASUREMENT USING A DUAL SAMPLING CHAMBER AND GAS ANALYSIS SYSTEM

Malcolm B. McIlroy, Belvedere, and Ralph C. Targett, El Cerrito, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 10, 1981, Ser. No. 252,886
Int. Cl.³ B01D 59/44
U.S. Cl. 250—282 **8 Claims**

6. A method of simultaneously measuring the tensions of gases in the blood stream of an animal, including man, and the resistance of the skin of said animal to the flow of said gases comprising the steps of contacting an area of the skin of said animal with the gas permeable boundary walls of two collecting chambers, heating the area of skin defined by said boundary walls, and continuously monitoring the temperature of said area of skin, collecting in said collecting chambers gases which have diffused through said area of skin and passing said gases to a gas analysis instrument, measuring the proportions and changes in proportions of gaseous constituents of the gases flowing from both collecting chambers, halting the flow of gases from one of said chambers to said instrument, measuring the proportions and changes in proportions of the gaseous constituents of the gases flowing from the single collecting

chamber, and determining the resistance of the skin of the subject to the flow of said gaseous constituents, and the tensions of said gaseous constituents in the bloodstream of said animal.

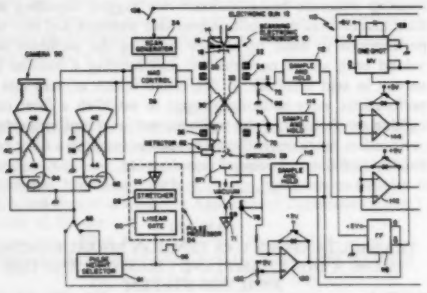


4,439,680

COLOR-CODED MAPPING SYSTEM AND METHOD FOR IDENTIFYING ELEMENTS IN A SPECIMEN

John H. Broadhurst, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 163,219, Jun. 26, 1980, abandoned.
This application Jun. 28, 1982, Ser. No. 393,031
Int. Cl.³ H01J 37/00
U.S. Cl. 250—310 18 Claims



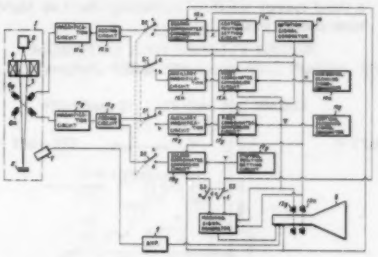
1. A color-coded mapping system comprising means for producing potentials corresponding to the position of a particle beam as it is moved over a specimen to be analyzed, means for producing a short potential pulse each time an X-ray is detected whose height is proportional to the X-ray energy, means for sampling and holding signals representative of the position of said particle beam as it moves over said specimen, means for sampling and holding the short potential pulse occurring at the time each X-ray is detected, a hue modulator for producing bright-up pulses, a color cathode ray tube including three electron guns, each gun providing a primary color, means for activating said guns including a timing element providing a short electrical pulse enabling said hue modulator to activate said electron guns to produce a spot of light on the screen of said cathode ray tube, said hue modulator causing said electron guns to be activated in accordance with the height of the short potential pulse which represents the amount of X-ray energy, whereby colors are produced at various locations on the screen of said cathode ray tube which represent the elemental composition of said specimen.

4,439,681

CHARGED PARTICLE BEAM SCANNING DEVICE

Setsuo Norioka, and Naoki Date, both of Akishimashi, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 312,955
Claims priority, application Japan, Oct. 24, 1980, 55-149165
Int. Cl.³ H01J 37/26
U.S. Cl. 250—310 5 Claims



1. A charged particle beam scanning device enabling the beam to be scanned in a raster over the surface of a specimen such that the size of the raster and/or the angular orientation of the raster and/or the center of the raster can be changed relative to the specimen without moving the specimen, said scanning device comprising:

(a) a scanning signal generator for generating two repetitive scanning signals,

(b) a charged particle beam deflecting means responsive to said scanning signals for deflecting the charged particle beam over the specimen surface in a raster defined by horizontal and vertical scanning directions,

(c) magnification means for adjusting the length of scan of the charged particle beam over the specimen as produced by the deflecting means by adjusting the amplitude of said scanning signals prior to application to said deflecting means,

(d) a rotation signal generator for supplying rotation signals indicative of a desired rotation of the raster,

(e) a first coordinates conversion circuit responsive to the scanning signals and the rotation signals for generating modified scanning signals for rotating the raster and scanning directions of the charged particle beam,

(f) means for generating d.c. signals indicative of a desired shift of the center of the raster,

(g) a second coordinates conversion circuit responsive to the signals indicative of a desired shift and the rotation signals for shifting the raster in the current scanning directions, and

(h) means for adding the outputs of the first and second coordinates conversion circuits and applying said sum signal to said magnification circuit.

4,439,682

NOISE ERASING METHOD IN A RADIATION IMAGE RECORDING AND REPRODUCING METHOD

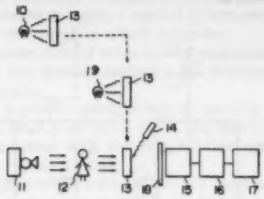
Seiji Matsumoto; Masanori Teraoka, and Takao Komaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1982, Ser. No. 338,734
Claims priority, application Japan, Jan. 12, 1981, 56-2970
Int. Cl.³ G01T 1/11
U.S. Cl. 250—327.2 6 Claims

1. In a radiation image information recording and reproducing method where a stimulable phosphor sheet is exposed to a radiation to record a radiation image therein and then exposed to a stimulating ray to cause it to emit light therefrom in the pattern of the stored image, the emitted light is photoelectrically detected and converted to an electric signal, and a visible

image corresponding to the radiation image is reproduced by use of the electric signal,

a method of erasing the noise developing in the visible image from a once used stimulable phosphor sheet comprising conducting a first erasing by exposing said used stimulable phosphor sheet to light after said exposure to a stimulating ray so as to erase the remaining radiation energy of said



recorded radiation image, and thereafter conducting a second erasing by exposing said stimulable phosphor sheet to light in an exposure amount on a level of 1/5 to 3/10,000 compared with that in said first erasing immediately before the next radiography so as to erase the fog developing in said stimulable phosphor sheet after said first erasing.

4,439,683

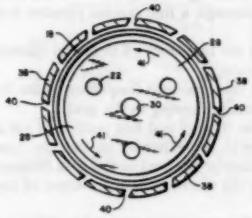
IONIZATION SMOKE DETECTOR

John J. Dobrzanski, New Britain, Conn., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 11, 1981, Ser. No. 233,352

Int. Cl.³ H01J *47/02*

U.S. Cl. 250—381 **6 Claims**



1. An ionization smoke detector having a sensing chamber and comprising in combination:

(a) a screen electrode enclosing and forming the outer limits of said sensing chamber, while exposing said chamber to the ambient atmosphere through the openings defined therein;

(b) baffle means covering said screen electrode in close proximity thereto;

(c) said baffle means having a plurality of spaced, axially extending slit-like openings around the periphery thereof for permitting the transfer of said atmosphere from and to said sensing chamber;

(d) said baffle means including means for deflecting air currents directed normal to the peripheral surface of said baffle means such that the air currents enter said sensing chamber at an angle other than said normal angle and are concentrated at the periphery inside said chamber; said means for deflecting including each of said slit-like openings, said openings being skewed with respect to the radius of said sensing chamber such that they produce said deflection and concentration of said air currents.

4,439,684

ACCELERATING GRID

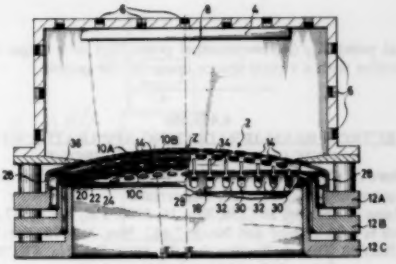
Johann Hemmerich; Peter Kupschus, both of Jülich, and Helmut Fränkle, Unterhaching, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich and Messerschmitt Bolkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, both of, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 263,929

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018623

Int. Cl.³ H01J *3/14, 7/26*

U.S. Cl. 250—396 R **9 Claims**



1. An accelerating grid for focusing ion beams, said grid comprising:

(a) at least one orifice plate, said plate having:

(i) an ion focusing means, said means having a plurality of through-holes formed therein, each of said through-holes having an axis that converges with other through-hole axes on a common focusing point,

(ii) resilient regions being integrally formed in said plate between said ion focusing means and the outer perimeter of said plate, at least some of said resilient regions including a plurality of parallel slots in the plate rim portion forming mutually separated, resiliently bendable plate connector webs, separating cuts in said plate extending from each of said slots into proximity with the outermost of said through-holes; and other said resilient regions including at least two mutually offset and overlapping parallel rows of slots forming plate connector webs therebetween whereby said resilient regions are elastic and deformable in the direction of the expansion of said plate when said plate is heated,

(b) and support means for fixably securing the outer perimeter of the orifice plate.

4,439,685

CORPUSCULAR BEAM BLANKING SYSTEM

Erich Plies, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 6, 1981, Ser. No. 290,473

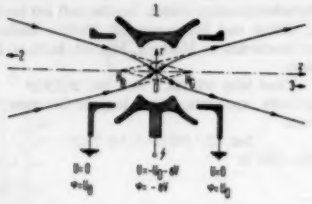
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036659

Int. Cl.³ G21K *1/08;* H01J *3/14*

U.S. Cl. 250—398 **7 Claims**

1. A corpuscular beam blanking system, comprising: a source; a target; an electrostatic three-electrode Einzel-lens as a blanking lens between the source and target whose electrodes are designed in the manner of a filter lens; a center electrode of the Einzel-lens being provided at a high voltage and having a

blanking signal supplied to it via a capacitor; and said blanking lens being inserted in the beam path in such manner that a



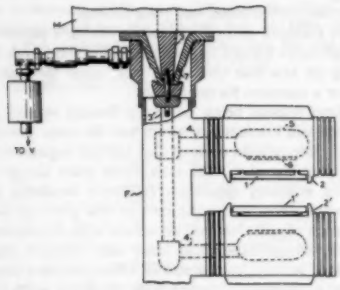
nodal point K_G (here=principal point H_G) of a target side coincides with a virtual source image of the system.

4,439,686

ELECTRON BEAM-IRRADIATING APPARATUS WITH CONICAL BUSHING SEAL-SUPPORT

Richard N. Cheever, Acton, Mass., assignor to Tetra Pak Développement Ltd., Lausanne, Switzerland

Division of Ser. No. 187,736, Sep. 16, 1980, Pat. No. 4,367,412, which is a division of Ser. No. 957,483, Nov. 3, 1978, Pat. No. 4,305,000. This application Sep. 28, 1982, Ser. No. 425,707
Int. Cl.³ A01J 37/00; H05K 5/00
U.S. Cl. 250—492.3 1 Claim



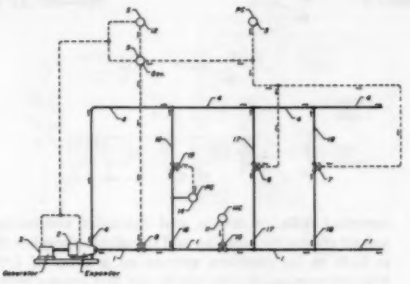
1. Apparatus for electron-beam-irradiating surfaces passed along a predetermined region, having, in combination, electrically triggered repetitive pulse-generating means having a stacked array of discharge gaps connected with a corresponding staggered co-extensive array of capacitors and disposed in a pressurized vessel; evacuated electron gun means provided with electron-pervious window means; means for electrically connecting the pulse-generating means to the electron gun means to draw therefrom electron-beams exiting the window means in response to the pulses generated by the pulse-generating means; and high-voltage insulating means separating said pressurized vessel from said evacuated electron gun means and supporting said electrically connecting means, said high-voltage insulating means comprising a conically-shaped bushing forming a seal between said pressurized vessel and said evacuated electron gun means, with one side of said bushing being exposed to the pressure in said pressurized vessel and the other side of said bushing being exposed to the vacuum in said evacuated electron gun means, said electrically connecting means comprising electrical conductors supported by the apex of said conically-shaped bushing at opposite sides thereof and being electrically connected through said apex, one of said conductors being connected to said pulse-generating means and the other of said conductors being connected to a cathode of said electron gun means.

4,439,687

GENERATOR SYNCHRONIZATION IN POWER RECOVERY UNITS

Charles E. Wood, Schaumburg, and Ronald J. Vangelisti, Marseilles, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 9, 1982, Ser. No. 396,569
Int. Cl.³ H02P 9/04
U.S. Cl. 290—40 R 16 Claims



1. In a system for recovering power by utilizing pressurized gas from a process, wherein a portion of the gas is employed to drive an expander which mechanically drives a generator, wherein the generator provides electrical power to a grid, wherein it is necessary to maintain constant the pressure at which the process operates; a method of synchronizing the frequency of electrical current produced by the generator to the frequency of electrical current in the grid, comprising the steps of:

(a) controlling pressure in a first pipeline supplying a first portion of the gas to the expander at a point upstream of an expander control valve and downstream of a second control valve by adjusting the position of said second control valve and by varying the flow of a second portion of the gas through a first bypass pipeline bypassing the expander;

(b) monitoring the frequency of electrical current produced by the generator;

(c) comparing the generator frequency to the frequency of electrical current flowing in the grid;

(d) adjusting the flow of said first portion of gas through the first pipeline to the expander so that the generator frequency is acceptably equal to the grid frequency; and,

(e) connecting the electrical power output of the generator to the grid.

3. In a system for recovering power by utilizing pressurized gas from a process, wherein a portion of the gas is employed to drive an expander which mechanically drives a generator, wherein the generator provides electrical power to a grid, wherein it is necessary to maintain constant the pressure at which the process operates; a control system for synchronizing the frequency of electrical current produced by the generator to the frequency of electrical current in the grid, comprising:

(a) an expander control valve located in a first pipeline supplying a first portion of the gas to the expander;

(b) means for controlling pressure in the first pipeline at a point upstream of said expander control valve and downstream of a second control valve by use of said second control valve and by varying the flow of a second portion of the gas through a first bypass pipeline, which bypasses said expander;

(c) means for monitoring the frequency of electrical current produced by the generator;

(d) means for comparing the generator frequency to the frequency of electrical current flowing in the grid;

(e) means for adjusting said expander control valve and thereby the flow of said first portion of gas through the first pipeline to the expander so that the generator frequency is acceptabley equal to the grid frequency; and,

(f) means for connecting the electrical power output of the generator to the grid.

11. In a system for recovering power by utilizing pressurized gas from a process, wherein a portion of the gas is employed to drive an expander which mechanically drives a generator, wherein the generator provides electrical power to a grid, wherein it is necessary to maintain constant the pressure at which the process operates; a control system useful in starting operation of the expander which comprises:

(a) an expander control valve located upstream of the expander in a first pipeline feeding a first portion of the gas to the expander;

(b) a first pressure control means comprising a first bypass pipeline having a control valve, said first bypass pipeline communicating with the first pipeline upstream of the expander control valve;

(c) a second control valve located in the first pipeline upstream of the point at which the first bypass pipeline is joined to the first pipeline; and,

(d) a second pressure control means comprising a controller and two expander bypass pipelines, with each expander bypass pipeline having a control valve and communicating with the first pipeline upstream of the second control valve.

4,439,688

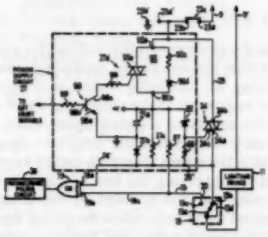
ELECTRICAL CONTROL APPARATUS

Louis W. Schornack, Niles, Ill., assignor to Dynascan Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 132,088, Mar. 20, 1980, which is a continuation-in-part of Ser. No. 22,453, Mar. 21, 1979. This application Apr. 17, 1981, Ser. No. 255,046

Int. Cl.³ H01H *9/00*

U.S. Cl. 307—115 **19 Claims**



9. In a power control system including a pair of power conductors across which energizing voltage is to be applied, a load device, and power switch means operable between power circuit closing and opening conditions, said power conductors, load device and power switch means being in mutual series circuit relation, the improvement comprising: a single-pole switch interposed in series circuit relation with said load device and power switch means, said single-pole switch having a movable single-pole, at least one stationary contact to which said movable pole can be moved from a first position disconnected from said one stationary contact to a second position where it engages said stationary contact, said single pole being continuously connected in series with said lighting device and power switch means independently of the position of the movable pole; and control means for controlling said power switch means including signal change detecting means, and signal responsive means connected to said one stationary contact of said single-pole switch and responsive to the change of the signal condition on said stationary contact from either a no-signal to a signal condition or from a signal to a no-signal condition occurring as said single-pole is moved from said first to said second position or from said second position to said first position for successively operating said power switch means between said power circuit closing and opening conditions.

4,439,689

CIRCUIT FOR THE CONTROL OF THE CYCLIC RATIO OF A PERIODIC PULSE SIGNAL AND DEVICE MULTIPLYING BY 2^n OF A PULSE SIGNAL FREQUENCY INCORPORATING SAID CONTROL CIRCUIT

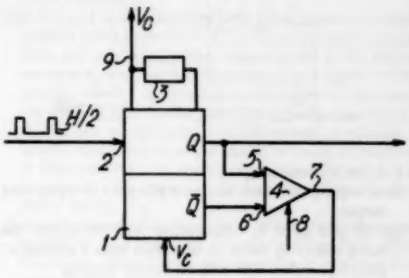
Henri Chazenfus, 127, Rue Jeanne d'Arc, 75013 Paris, France

Filed Dec. 9, 1981, Ser. No. 328,806

Claims priority, application France, Dec. 29, 1980, 80 27670

Int. Cl.³ H03K *5/04*; H03B *19/00*

U.S. Cl. 307—265 **2 Claims**



1. A circuit for generating a periodic pulse signal with frequency independent duty cycle, the pulse frequency being the same as the frequency of an input periodic signal in a wide range of frequencies, wherein it comprises:

a monostable multivibrator receiving the input signal at its trigger input, said periodic signal being subjected to the only restriction to cross only twice the trigger threshold of said multivibrator during its period, the triggering being inhibited during the falling edge of the input signal;

a capacitor, connected to the pulse length control input of said multivibrator, whose charging rate, which determines the length of the output pulse, is controlled by an error signal generated elsewhere in the circuit in order to maintain the output dry cycle at a given value independently of the frequency of the triggering signal over a wide range of frequencies, and whose capacitance can be chosen to move this frequency range from low frequencies to the highest frequency allowed by the residual built-in capacitance of said multivibrator between said pulse length control input;

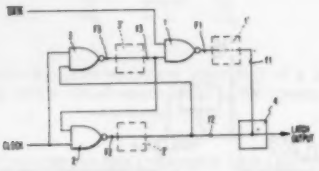
identical circuits connected on the direct (Q) and complementary ($\overline{Q}$) outputs of said multivibrator, providing two voltages having continuous components proportional to the mean values of the (Q) and ($\overline{Q}$) signals, with the same frequency independence for a given value of the duty cycle and with the same dependence upon fluctuations of the power supplies voltages;

an operational amplifier receiving at its inputs said voltages, the output of said operational amplifier providing said error signal and being connected to the on-state duration control input of said multivibrator, hence changing the charging rate of said capacitor, said charging rate, and therefore the frequency range of operation for a given value of said capacitor, being limited by the output current capability of said operational amplifier, said operational amplifier also comprising a control input for the offset voltage of the continuous voltages applied at its inputs, said control input making it possible to control the duty cycle of the output signals of said multivibrator.

4,439,690
THREE-GATE HAZARD-FREE POLARITY HOLD LATCH

Gerald A. Maley, Fishkill; Raymond H. Warren, Gardiner, and Douglas W. Westcott, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,891
Int. Cl.³ H03K *3/037, 19/20, 17/04*
U.S. Cl. 307—272 R **6 Claims**



1. A latch comprising

three logic gates, each having a plurality of inputs and one output,

one of said gates in combination with its output loading being relatively faster in operation than a second of said gates in combination with its output loading,

one input of said one and said second gates being connected to receive a clock input,

the output of said one gate being connected to one input of a third of said gates and to another input of said second gate, another input of said third gate being connected to receive a data input,

the output of said third and said second gates being connected to an output terminal,

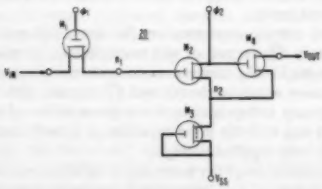
and

the output of said second gate being connected to another input of said first gate.

4,439,691
NON-INVERTING SHIFT REGISTER STAGE IN MOS TECHNOLOGY

Thomas J. Bartoli, Center Valley, and Yehuda Rotblum, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1981, Ser. No. 333,975
Int. Cl.³ H03K *3/295, 3/29*
U.S. Cl. 307—279 **3 Claims**



1. A semiconductor integrated circuit comprising a shift register stage including:

(a) a first MOS transistor having a gate electrode and a source and a drain terminal, the gate electrode being connected to a first clock pulse voltage source;

(b) a second MOS transistor whose gate electrode is connected to the drain terminal of the first transistor;

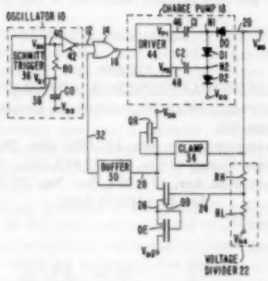
(c) a third MOS transistor whose gate electrode is connected to the source terminal thereof and whose drain terminal is connected to the source of the second transistor, the threshold of the third transistor corresponding to depletion mode; and

(d) a fourth MOS transistor whose source terminal is connected to the drain terminal of the third transistor and whose gate electrode is connected to the drain terminal of the second transistor and to a second, non-overlapping clock pulse voltage source, whereby an input signal applied to the source terminal of the first transistor appears as a delayed, corresponding output signal at the drain of the fourth transistor.

4,439,692
FEEDBACK-CONTROLLED SUBSTRATE BIAS GENERATOR

Jan J. P. M. Beekmans, San Jose, Calif., and John B. Hughes, Saltdean, Near Brighton, England, assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 7, 1981, Ser. No. 327,972
Int. Cl.³ H03L *1/00;* **H03K** *3/354*
U.S. Cl. 307—297 **17 Claims**



1. A circuit for generating a bias voltage for a semiconductor substrate wherein the circuit has oscillating means for repetitively supplying an oscillating signal at a given frequency, gating means responsive to the oscillating signal and to a feedback signal for supplying a gating signal which varies at the given frequency only when the feedback signal achieves a specified first relationship, pumping means responsive to the gating signal for supplying the bias voltage on an output line and for causing the bias voltage to move unidirectionally toward a desired value only when the gating signal achieves a specified second relationship, and feedback means responsive to the bias voltage for providing the feedback signal, characterized in that the feedback means comprises a field-effect transistor (FET) having a positive threshold voltage and an FET having a negative threshold voltage so arranged that the feedback signal achieves the first relationship when the absolute value of a reference voltage comprising the sum of the threshold voltages is at least equal to the absolute value of an internal voltage bearing a specified third relationship to the bias voltage.

4,439,693
SAMPLE AND HOLD CIRCUIT WITH IMPROVED OFFSET COMPENSATION

Charles H. Lucas, Newport Beach, and Lanny L. Lewyn, Palo Alto, both of Calif., assignors to Hughes Aircraft Co., El Segundo, Calif.

Filed Oct. 30, 1981, Ser. No. 316,453
Int. Cl.³ G11C *27/02*
U.S. Cl. 307—353 **16 Claims**

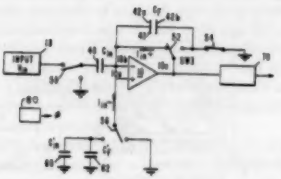
1. A sample-and-hold circuit having auto-zeroing, comprising:

a differential amplifier having positive and negative inputs and an output;

an input voltage source to be sampled;

a feedback capacitor having two plates, one of said plates being continuously connected to said negative amplifier input;

connecting means for connecting the other of said feedback capacitor plates to a common reference potential while shorting said amplifier output to said negative input, and for disconnecting said amplifier output from said negative input while disconnecting said other capacitor plate from said reference potential and reconnecting it instead to said amplifier output; and



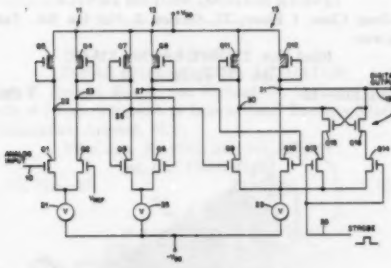
sampling means for sampling said input voltage source comprising a switch for coupling said amplifier negative input to said input voltage source whenever said other plate of said feedback capacitor is connected to said reference potential and for decoupling said negative amplifier input from said input voltage source whenever said other feedback capacitor plate is connected to said amplifier output, said positive amplifier input being connected to said reference potential at least whenever said other feedback capacitor plate is connected to said reference potential.

4,439,694

COMPARATOR CIRCUIT

Jeffrey R. Fox, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 21, 1981, Ser. No. 332,387
Int. Cl.³ H03K *5/153, 3/356*
U.S. Cl. 307—362 **7 Claims**



1. A comparator circuit comprising

input differential amplifier means including

first and second field effect transistors,

the input of the first field effect transistor being connected to a signal input terminal and the input of the second field effect transistor being connected to a point of reference potential, and

first and second output connections for producing differential output signals thereon;

latching differential amplifier means including

first and second field effect transistors,

the inputs of the first and second field effect transistors being coupled to the first and second output connections, respectively, of the input differential amplifier means, and

first and second output connections for producing differential output signals thereon; and

regenerative latch means including

first and second latching field effect transistors,

the input of the first latching field effect transistor being connected to the second latching field effect transistor and to the second output connection of the latching differential amplifier means,

the input of the second latching field effect transistor being connected to the first latching field effect transistor and to the first output connection of the latching differential amplifier means,

an output terminal connected to one of said latching field effect transistors,

said first and second latching field effect transistors when enabled being operable in a first set of operating conditions and producing a first output signal at the output terminal in response to differential output signals of one relative polarity at the output connections of the latching differential amplifier means, and being operable in a second set of operating conditions and producing a second output signal at the output terminal in response to differential output signals of the opposite polarity at the output connections of the latching differential amplifier means, and

first and second switching field effect transistors connected to said first and second latching field effect transistors, respectively, and operable in response to a strobe signal applied thereto to enable the first and second latching field effect transistors

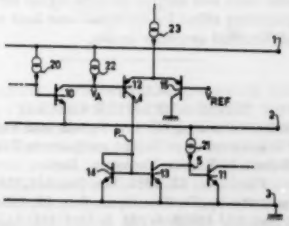
whereby in response to a strobe signal said switching field effect transistors enable said latching field effect transistors causing said latching field effect transistors to be switched by regenerative action to said first or second set of operating conditions producing said first or second output signal at the output terminal as determined by the relative polarity of the output signals at the output connections of the latching differential amplifier means.

4,439,695

INTERFACE CIRCUITS BETWEEN INJECTION-LOGIC LAYERS WHICH ARE SUPERIMPOSED AND BIASSED WITH DIFFERENT VOLTAGES

Joël A. Pelletier, Les Essarts le Roi, and Robert Breuillard, Deuil la Barre, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,266
Claims priority, application France, Sep. 26, 1980, 80 20698
Int. Cl.³ H03K *19/092, 19/091*
U.S. Cl. 307—477 **5 Claims**



1. An integrated current-injection logic circuit comprising transistors whose bases are connected to current injectors and to a collector of at least one further transistor, said integrated circuit being formed by a plurality of elementary cells which are arranged in series across a power supply, in such a way that the cells form superimposed stages between which the supply voltage is distributed, a first stage and a second stage at a lower level being logically interconnected by means of an interface

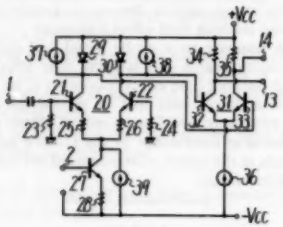
device having a first transistor (10) whose emitter is connected to a reference voltage, its base to a current source and in which the collector of said first transistor, which supplies the signal at the output of the first stage, controls a first auxiliary transistor (12) in said first stage whose conductivity type is opposite to that of said first transistor and whose collector is connected to the base of a second transistor in the second stage, which is not connected to a current injector, characterized in that the collector of said first auxiliary transistor constitutes the input terminal of a current mirror, whose output terminal is constituted by the collector of said second transistor, the emitter of said first auxiliary transistor being connected to the emitter of a second auxiliary transistor of the same conductivity type and situated in the same stage of the first one, whose base is connected to a reference voltage supply and whose collector is connected to ground.

4,439,696

DIVIDING CIRCUIT

Satoshi Yokoya, Chofu, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,551
Claims priority, application Japan, Apr. 6, 1981, 56-51332
Int. Cl.³ H03F *3/45, 3/343;* G06G *7/163*
U.S. Cl. 307—494 **19 Claims**



1. A dividing circuit for producing a divided output signal in response to first and second input signals, comprising:

first differential amplifier means supplied with said first and second input signals and having an output for producing an output quotient signal corresponding to the division of said first input signal by said second input signal;

non-linear load means connected to the output of said first differential amplifier means; and

second differential amplifier means connected in cascade to said first differential amplifier means and having an input supplied with said output quotient signal for providing a compensating effect for the non-linear load means of said first differential amplifier means.

4,439,697

SENSE AMPLIFIER CIRCUIT

Yasoji Suzuki, Yokosuka; Hiroaki Suzuki, and Yukihiro Saeki, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 22, 1981, Ser. No. 333,321
Claims priority, application Japan, Jan. 12, 1981, 56-2980
Int. Cl.³ H03K *5/153, 5/24;* G11C *7/06*
U.S. Cl. 307—530 **8 Claims**

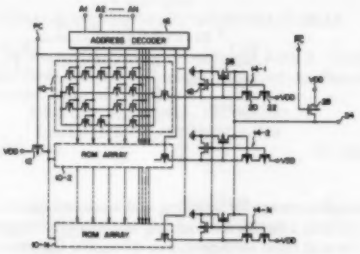
1. A sense amplifier circuit which is used for a plurality of read only memory arrays each having a single output terminal in a complementally metal-oxide-semiconductor integrated circuit, and has a plurality of input terminals respectively connected to the output terminals of said read only memory arrays and a single output terminal, said sense amplifier circuit comprising:

first and second power source terminals;

first and second clock terminals supplied with complementary signals;

a plurality of first transistors of a first channel type each connected between said first power source terminal and a corresponding one of said input terminals and each having a control terminal connected to said first clock terminal;

a plurality of second transistors of a second channel type each connected between said second power source terminal and a corresponding one of said input terminals and each having a control terminal connected to said output terminal;



a plurality of third transistors of the first channel type connected between said output terminal and said first power source terminal and each having a control terminal connected to a corresponding one of said input terminals;

a plurality of fourth transistors connected between said first and second power source terminals through a corresponding one of said second and third transistors and each having a control terminal connected to either of said first and second clock terminals; and

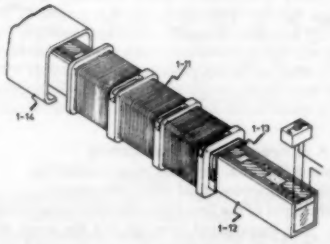
a fifth transistor of the second channel type connected between said output terminal and said second power source terminal and having a control terminal connected to said second clock terminal.

4,439,698

LINEAR SLIDING MOTOR DEVICE

Der-Jong Chen, 1 Floor, 77, Section 2, Nei Hu Rd., Taipei, Taiwan

Filed Nov. 27, 1981, Ser. No. 325,487
Int. Cl.³ H02K *41/00*
U.S. Cl. 310—12 **8 Claims**



1. A device for effecting linear movement comprising:

a plurality of solenoid means each having an energized state for creating a magnetic field when electrical current is applied to said solenoid to attract a ferro-magnetic member, and including means defining an interior space, said plurality of solenoid means being linearly assembled one to another, said space of each communicating with the spaces of adjacent ones of said solenoid means to form an elongated cavity;

an elevated rail slideably coupled in said cavity and including linearly spaced apart ferro-magnetic members; and

first switching means fixed to and carried with said rail for effecting selective sequential energization of said solenoid means to sequentially create a magnetic field to attract a predetermined one of said ferro-magnetic members and thus effect relative linear sliding movement of said solenoid means with respect to said rail, said first switching means including right and left switching means each defining a continuous tooth-shaped electrically conductive strip disposed along the axial length of said rail, the teeth of said right switching means being alternatively interposed between the teeth of said left switching means, said electrically conductive strips of said right and left switching means defining therebetween an electrically insulated area, opposite adjacent ones of said teeth of said right and left switching means forming a pair of electrically conductive members each associated with a predetermined one of said ferro-magnetic members;

second switching means operatively connected to said right and left switching means for selectively electrically energizing one of said right or left switching means and to selectively electrically degenergize the other of said right or left switching means to establish the direction of said relative linear sliding movement of said solenoid means with respect to said rail; and

brush means associated with each of said solenoid means, each of said brush means sequentially contacting one of said pair of electrically conductive members as said solenoid means moves linearly relative to said rail to sequentially energize said solenoid means to effect linear movement of said solenoid means relative to said rail, wherein said solenoid means linearly moves relative to said rail in a first direction when said right switching means is electrically energized by said second switching means, said brush means of said solenoid means thereby sequentially coming into and out of contact with the teeth of said right switching means, and wherein said solenoid means linearly moves in a second direction, opposite to said first direction, when said left switching means is electrically energized by said second switching means, said brush means of said solenoid means thereby sequentially coming into and out of contact with the teeth of said left switching means.

4,439,699

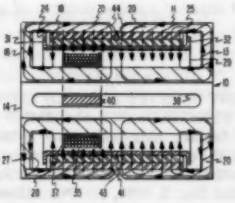
LINEAR MOVING COIL ACTUATOR

Arthur P. Brende, Byron, and Richard W. Luoma, Chatfield, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,169

Int. Cl.³ H02K *41/02*

U.S. Cl. 310—13 **3 Claims**



1. A linear actuator for positioning the transducer carriage assembly in a disk file comprising:

a cylindrical outer core element of magnetically permeable material;

a cylindrical inner core element of magnetically permeable material, coaxial and concentrically mounted within said outer core element;

at least one axially extending slotted opening in said inner core element;

end closure means of magnetically permeable material associated with said core elements, whereby said core elements and said end closure means form a substantially totally enclosed annular space;

a continuous cylindrical permanent magnet within said annular space adjacent said outer core element inner wall in concentric relation therewith;

a tubular retaining element of non magnetic conductive material concentrically within said permanent magnet which provides a shorted turn and retains said magnet against said outer core;

annular sealing elements at each axial end of said permanent magnet with said retaining element being flared at each end to cooperate with said annular sealing elements to seal said permanent magnet from said annular space;

a carriage supported for linear motion in the direction of the axis of said core elements with a portion thereof extending within said inner core element;

a drive coil substantially coaxial with said core elements and disposed in said annular space between said inner core element and said tubular retaining element; and

connecting means extending through said at least one slotted opening and interconnecting said drive coil and said carriage for unitary linear motion.

4,439,700

MAGNETIC DRIVE SYSTEM FOR GENERATING LINEAR MOVEMENTS

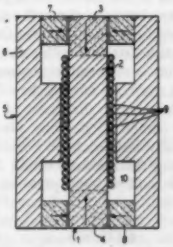
Klaus Menzel; Ludwig Erd, both of Berlin, and Marlene Marinescu, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Vacuumschmelze GmbH, Fed. Rep. of Germany

Filed Feb. 25, 1982, Ser. No. 352,325

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111222

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—13 **6 Claims**



1. In a magnetic drive system for generating linear movement having a yoke having a longitudinal bore therein, a bar-shaped armature normally centrally positioned in said bore and seated in said bore for longitudinal movement relative to said yoke, said yoke and said armature consisting primarily of low magnetic retentive material forming a magnetic circuit and at least one permanent magnet disposed in said magnetic circuit effecting a magnetic flux in the armature directed from both ends of the armature to the center thereof or vice versa, the improvement comprising:

a single coil connected to a central portion of said armature for longitudinal comovement therewith relative to said yoke,

said coil being connected to a voltage source for supplying a current flow through said coil for generating a force effective in the longitudinal direction of said armature in said magnetic circuit for moving said arma-

ture, and said coil having windings wound about said armature such that the magnetic flux generated by said coil enters and departs from said armature in said longitudinal direction of the armature; and

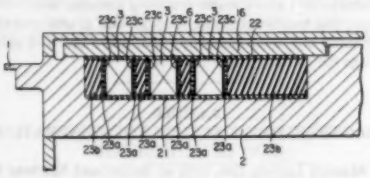
said yoke having a length in the longitudinal direction which is greater than that portion of the armature in the longitudinal direction consisting of low magnetic retentive material for generating a restorative magnetic force for re-positioning said armature to said central position in said bore after said armature is moved from said central position by said current in said coil.

4,439,701

ROTOR OF A SUPERCONDUCTIVE ROTARY ELECTRIC MACHINE

Kouichi Okamoto, Kobe; Masaki Sakuyama, Ashiya; Tadatoshi Yamada, Kobe, and Shiro Nakamura, Takarazuka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,726
Claims priority, application Japan, May 29, 1981, 56-84143
Int. Cl.³ H02K *15/12*
U.S. Cl. 310—45 **2 Claims**



1. A rotor for a superconductive rotary electric machine comprising:

a coil carrying shaft;

a plurality of superconductive magnetic field coil means mounted on said coil carrying shaft and having coil end portions which are curved along the circumference of an end portion of the coil carrying shaft, said coil end portions being spaced in the direction of the length of said shaft to define gaps between the coil end portions;

electrically insulating filler sheets against the side surfaces of said coil end portions on opposite sides of said gap, said sheets being an elastic material impregnated with an electrically insulating resin and having the side against the coil end portion conforming to the shape of the coil end portion; electrically insulating padding plate means applied over the electrically insulating filler sheets; and

electrically insulating filler means filling the remainder of said gaps between said padding plate means.

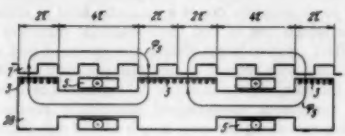
4,439,702

ELECTRIC MOTOR HAVING HELICAL STATOR

Viktor T. Belikov; Anatoly D. Ivlev, and Viktor G. Chelak, all of Odessa, U.S.S.R., assignors to Odessky Politekhnicheskiy Institut, Odessa, U.S.S.R.

PCT No. PCT/SU80/00165, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/01286, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 29, 1980, Ser. No. 385,388
Int. Cl.³ H02K *7/06*
U.S. Cl. 310—80 **6 Claims**

1. An electric motor comprising a stator having a main helical magnetic core with grooves; an armature positioned within said grooves of said main helical magnetic core of said stator; a rotor disposed within a bore of said stator; main salients forming a main magnetic field and disposed along a helical line around the rotor, the length of the main salients being equal to $a\delta\text{-}\tau$, and the distance between main salients being $(2-a\delta)\tau$, where $a\delta$ is a coefficient of a rated pole arc and τ is a pole pitch of the motor; wherein the improvement comprises said main helical core including an additional groove, an excitation winding being positioned in said additional groove, and the portions of each turn of the helical core,



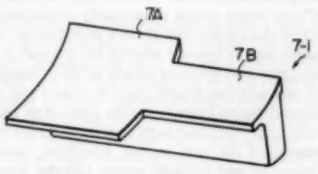
on which said armature and said excitation winding are positioned, having a length which provides axial alignment of the grooves, in which the armature is positioned, within all the turns of said main magnetic core.

4,439,703

DIRECT CURRENT MOTOR

Yoshinori Kohzai, Hino, and Shigeaki Oyama, Hachioji, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 95,985
Claims priority, application Japan, Jul. 31, 1978, 53-92557
Int. Cl.³ H02K *1/10*
U.S. Cl. 310—186 **6 Claims**



1. A direct current motor, comprising:

a yoke;

an armature disposed at the center of said yoke having armature windings wound thereon;

a plurality of main magnetic poles equidistantly spaced around the inner circumference of said yoke, each of said main magnetic poles having a wide portion and a narrow portion, only said wide portion including an end part integrally formed at each end thereof, wherein the air-gap between said armature and said main magnetic poles is narrow at the center of said wide portion and at the center of said narrow portion and increases as the distance from the center portion increases and wherein the air-gap between said armature and said end parts is narrow and wherein an electromotive force is induced in each of said armature windings which is smaller than a predetermined value; and

a plurality of interpoles disposed at positions located between said adjacent narrow portions of said main magnetic poles.

4,439,704

PERMANENT MAGNET EXCITED ROTOR FOR A SYNCHRONOUS MACHINE

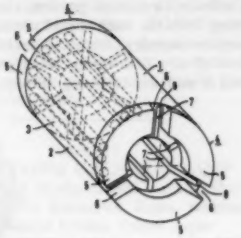
Hans-Joachim Adelski, Salz, and Josef Pfaffinger, Wilfershausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,640
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2950008
Int. Cl.³ H02K *3/06*
U.S. Cl. 310—211 **5 Claims**

1. A permanent magnet-excited rotor for a synchronous machine which has a cast short circuit cage comprising shorting rings at both ends, and a cylindrical lamination stack se-

cured against centrifugal stresses and comprising slots that extend generally radially relative to the axis of the stack as well as longitudinally along the stack for receiving permanent magnets, the rotor comprising:

means, rigidly connected to the lamination stack, closing the slots at the outer periphery of the rotor; and



recesses in at least one of the rings, the total number of recesses being equal to the number of the slots and each of the recesses being aligned with a corresponding one of the slots and being large enough to allow a magnet to be inserted longitudinally therethrough into the respective one of the slots.

4,439,705

OSCILLATING CRYSTAL TRANSDUCER SYSTEMS WITH SYMMETRICAL TEMPERATURE COMPENSATOR

James P. Corbett, 923 Palermo Dr., Santa Barbara, Calif. 93105

Filed Dec. 8, 1981, Ser. No. 328,520

Int. Cl.³ G01B 7/16

U.S. Cl. 310—338 **21 Claims**

1. A force transducer comprising;

two plate-shaped piezoelectric crystals having pairs of electrodes disposed on corresponding regions on opposite sides of each crystal, the two crystals arranged to oscillate in the thickness shear mode and being held closely together face-to-face by small spacers secured to them near their peripheries and at positions of minimum frequency versus force response of the crystals, the spacers being of sufficient thickness to prevent the electrodes from touching one another,

at least two seating members engaging the peripheral edge of one of the crystals and arranged to apply a force directed along a line extending through the plate-like crystal from one seating member to the opposite portion of the peripheral edge,

means for energizing the electrode pairs to maintain oscillation of each crystal.

4,439,706

QUARTZ CRYSTAL VIBRATOR

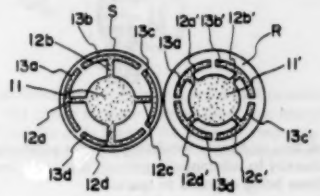
Youichi Matsuoka, Sayama, and Fumitaka Tajika, Iruma, both of Japan, assignors to Nihon Dempa Kogyo Company Limited, Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,403

Claims priority, application Japan, Oct. 11, 1980, 55-160410[U]

Int. Cl.³ H01L 41/22

U.S. Cl. 310—353 **13 Claims**



1. A quartz crystal vibrator comprising:

a quartz crystal plate having a circumference and having obverse and reverse sides, each of said obverse and reverse sides having a central portion;

a first excitation electrode provided on the obverse side of said quartz crystal plate at the central portion thereof;

a first connecting electrode led out radially from said first excitation electrode on said obverse side;

a first supporting electrode, connected to said first connecting electrode, provided fragmentarily along the entire circumference of said quartz crystal plate on the obverse side thereof;

a second excitation electrode provided on the reverse side of said quartz crystal plate at the central portion thereof at a position underlying said first excitation electrode;

a second connecting electrode led out radially from said second excitation electrode on said reverse side; and

a second supporting electrode, connected to said second connecting electrode, provided fragmentarily over substantially all of a substantially circular ring-like region located inwardly of the circumference of said quartz crystal plate on said reverse side, so as not to overlap said first supporting electrode.

4,439,707

SPARK PLUG WITH A WIDE DISCHARGE GAP

Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Anjo; Minoru Nishida, and Minoru Ohta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 22, 1981, Ser. No. 285,333

Claims priority, application Japan, Jul. 23, 1980, 55-101776; Sep. 1, 1980, 55-121449

Int. Cl.³ H01T 13/02

U.S. Cl. 313—130 **14 Claims**

1. A spark plug with a wide discharge gap comprising:

a plug shell;

a cylindrical center electrode disposed along a spark plug axis;

an insulator of substantially cylindrical shape disposed so as to surround and electrically insulate said center electrode from said plug shell;

at least one ground electrode grounded through said plug shell and disposed to face and be spaced from said center electrode to form a gap therebetween; and

an outer insulating layer comprising a material having a resistance to heat and high voltage formed on one of said electrodes so as to expose a portion of said one electrode, said outer insulating layer being extended into the gap between said electrodes to define a shortest gap between a surface of said insulating layer and the other of said elec-

trodes, and further including an inner insulating layer of material having a high dielectric constant, said outer insulating layer being formed on said inner insulating layer

so that said inner insulating layer is substantially covered thereby to substantially prevent said inner insulating layer from being exposed to sparks.

4,439,708

SPARK PLUG HAVING DUAL GAPS

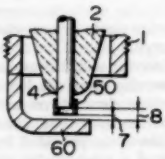
Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Anjo; Minoru Nishida, and Minoru Ohta, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 24, 1981, Ser. No. 257,134

Claims priority, application Japan, May 30, 1980, 55-73262; May 30, 1980, 55-73263

Int. Cl.³ H01T *13/20*

U.S. Cl. 313—140 **17 Claims**



1. In a spark plug for use with internal combustion engines including a central electrode supported by an insulator and having a substantially rod-like shape, a metallic shell surrounding and secured to said insulator, and an earth electrode mounted on said metallic shell in opposed relation to said central electrode, the improvement comprising a body of a dielectric substance mounted on one of said central and earth electrodes such that a first gap for capacitive discharge is defined between said body of the dielectric substance and the other of said both electrodes, and a second gap for inductive discharge is defined between said both electrodes, said second gap for inductive discharge being dimensionally larger than said first gap for capacitive discharge, said body of the dielectric substance having polarization effects which cause capacitive discharge.

4,439,709

COLOR PICTURE TUBE HAVING IMPROVED TEMPERATURE COMPENSATING SUPPORT FOR A MASK-FRAME ASSEMBLY

Frank M. Sohn, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1982, Ser. No. 373,050

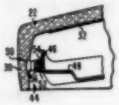
Int. Cl.³ H01J *29/07*

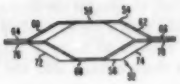
U.S. Cl. 313—406 **2 Claims**

1. In a color picture tube of the type including an evacuated envelope enclosing a cathodoluminescent screen, an electron gun and an apertured mask attached to a frame which is suspended in relation to said screen by support means, an axis passing through the center of said electron gun and the center of said screen being the longitudinal axis of said tube, the improvement comprising said support means including

a plurality of studs embedded in said envelope and said frame, and

a plurality of spring assemblies spaced around and attached to said frame, each spring assembly comprising a first spring and a second spring, said first and second springs each including a central portion, two flexible portions extending from the ends of said central portion and two end portions extending from said flexible portions, the end portions of said first spring being attached to the end portions of said second spring, the central portion of said





first spring being attached to said frame, the central portion of said second spring including an aperture in engagement with one of said studs, said flexible portions of said first and second springs being of rhomboid shape and offsetting the central portion of said second spring from the central portion of said first spring in the direction of said longitudinal axis away from said screen,

whereby, when said mask and frame expand during tube operation, said flexible portions bend to permit the central portions of the first springs to move toward the central portions of the said second springs thereby moving said mask and frame relative to said screen.

4,439,710

ELECTROMAGNETIC FOCUSING CATHODE-RAY TUBE

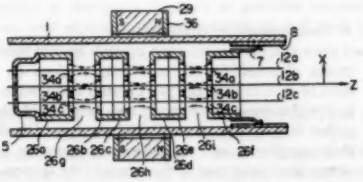
Kuniharu Osakabe; Isao Yoshimi, both of Mobara, and Kyohei Fukuda, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,598

Claims priority, application Japan, Jul. 2, 1980, 55-89215; Jul. 2, 1980, 55-89216

Int. Cl.³ H01J *29/64*

U.S. Cl. 313—414 **15 Claims**



1. An electromagnetic focusing cathode-ray tube comprising an electron gun assembly and a magnetic focusing field forming means including in combination a permanent magnet member disposed on an outer circumference of the tube and a magnetic material assembly disposed on one side of said electron gun assembly within the tube, said magnetic material assembly having a plurality of electron beam permeable apertures, each aperture extending in a direction of the tube axis,

wherein said magnetic material assembly includes plural pairs of magnetic material members, the magnetic material members in each pair being disposed to oppose each other in the direction of the tube axis with a gap defined therebetween, said permanent magnet member and said plural pairs of magnetic material members being arranged so that magnetic focusing fields having their senses reverse to each other in the direction of the tube axis are formed in the respective gaps associated with adjacent ones of said magnetic material member pairs, and adjacent magnetic material members of different oes of said magnetic material member pairs being directly coupled to each other so that magnetic fluxes emanated inwardly from said permanent magnet member are absorbed by said directly coupled magnetic material members.

4,439,711

METAL VAPOR DISCHARGE LAMP

Katsuo Murakami; Isao Shoda; Hitoshi Kodama; Shoji Orikasa, and Hiroshi Ito, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

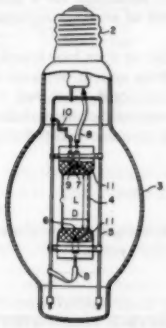
PCT No. PCT/JP79/00327, § 371 Date Aug. 27, 1980, § 102(e) Date Aug. 27, 1980, PCT Pub. No. WO80/01436, PCT Pub. Date Jul. 10, 1980

PCT Filed Dec. 27, 1979, Ser. No. 196,484

Claims priority, application Japan, Dec. 28, 1978, 53-166080; Dec. 28, 1978, 53-166081; Dec. 28, 1978, 53-166083; Dec. 28, 1978, 53-166082

Int. Cl.³ H01J *61/20, 61/44*

U.S. Cl. 313—487 **9 Claims**



1. A metal vapor discharge lamp having an outer jacket, the inside wall of which is covered by a fluorescent layer comprising at least one red emitting phosphor whose emission peak is in a wavelength range of 610–630 nm and whose luminescence forms a line, said lamp containing an arc tube within the confines of said outer jacket which encloses zinc and/or cadmium in addition to mercury as the main luminous contents, the total content of zinc and/or cadmium taken relative to the total amount of enclosed metal including mercury being between 0.1 and 50 weight-percent.

4,439,712

ANODE STRUCTURE FOR PHOTOMULTIPLIER TUBE

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 26, 1981, Ser. No. 296,527

Int. Cl.³ H01J *43/00*

U.S. Cl. 313—533 **9 Claims**

1. In an electron multiplier assembly comprising,

insulative support means having a plurality of support apertures therethrough,

a plurality of communicating dynodes affixed to said support means, said dynodes including a penultimate dynode and an ultimate dynode, and

an anode disposed substantially within and spaced from said ultimate dynode, the improvement wherein said anode comprises,

a substantially flat, rigid rectangular member having a longitudinally-extending aperture formed therein, said aperture being directed substantially toward said penultimate dynode, said anode member having mounting means extending from the ends thereof for inflexibly securing said anode within said support apertures of said support means.

4,439,713

DEFLECTION CONTROL CIRCUIT FOR IMAGE PICK-UP TUBE

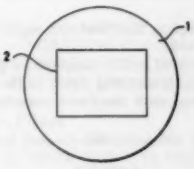
Takashi Nakamura, Hadano, and Yoshihiro Morioka, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,028

Claims priority, application Japan, Jul. 11, 1980, 55-95476

Int. Cl.³ H01J *29/56*

U.S. Cl. 315—370 **16 Claims**



1. Apparatus for controlling the deflection of an electron beam in an image pick-up tube of the type including target means, means for generating the electron beam, and deflection means for causing the generated electron beam to scan said target means, said apparatus comprising:

means for generating a saw-tooth signal and for supplying said saw-tooth signal to said deflection means for causing said electron beam to scan a raster image area on said target means; and

means for neutralizing charges in an over-scan area on said target means outside of said raster image area scanned by said electron beam for each scan of said raster image area to prevent distortion of a reproduced picture resulting from scanning of a fringe area of said raster image area by said electron beam by modifying said saw-tooth signal supplied to said deflection means so as to cause said electron beam to scan said over-scan area on said target means outside of said raster image area for each scan of said raster image area.

4,439,714

DEFLECTION CONTROL CIRCUIT

Takashi Nakamura, Hadano, and Yoshihiro Morioka, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1981, Ser. No. 283,358

Claims priority, application Japan, Jul. 14, 1980, 55-95892

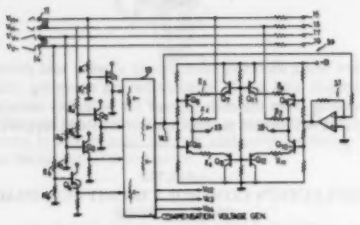
Int. Cl.³ H01J *29/56*

U.S. Cl. 315—371 **9 Claims**

1. A deflection control circuit for controlling the deflection of an electron beam in an image pickup tube of a television

camera having plural image-pickup tubes, each of said tubes having beam deflection means associated therewith, said deflection control circuit being of the type including sawtooth signal source means generating a sawtooth scanning signal to be supplied to the beam deflection means of another image pickup tube of said plural tubes and control signal generating means for producing a control signal in response to said sawtooth scanning signal to compensate for mechanical differences between said beam deflection means of said first-mentioned and other image pick-up tubes, said deflection control circuit comprising:

a pair of controllable current sources of complementary types coupled in series together to define a junction there-



between, each such current source having a control terminal, said pair of controllable current sources coupled to said control signal generating means with said control terminals thereof supplied with said control signal such that the flow of current through the respective controllable current sources is controlled to vary in a complementary relation;

an impedance coupling said sawtooth signal source means to said junction; and

output means coupled to said junction for providing a compensated sawtooth scanning signal to the beam deflection means associated with the first-mentioned image pickup tube.

4,439,715

APPARATUS FOR ACCURATELY MOVING A BODY IN ACCORDANCE WITH A PREDETERMINED MOTION

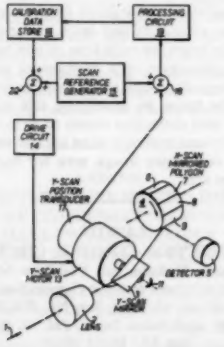
Malcolm F. Taylor, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Nov. 12, 1981, Ser. No. 320,685

Claims priority, application United Kingdom, Nov. 19, 1980, 8037069

Int. Cl.³ G05B *11/01*

U.S. Cl. 318—627 **8 Claims**



1. An apparatus for accurately moving a body in accordance with a predetermined motion including an actuator capable of being coupled to a movable body so as to move it in a controlled manner repetitively in at least approximately the required motion; means for comparing the actual position of the body with the required position at a plurality of different points during the course of a plurality of the repetitive predetermined motions, with substantially less than the total number of comparisons being performed during any one of the motions; and means which utilise the results of said comparisons to control said actuator to compensate during subsequent motions for said errors.

4,439,716

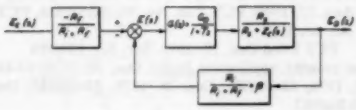
COMPENSATION APPARATUS FOR AN ELECTROHYDRAULIC SERVOVALVE

George E. Minnich, Vestal, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,059

Int. Cl.³ G05D *23/275*

U.S. Cl. 318—632 **4 Claims**



1. Compensation apparatus for a drive system associated with a torque motor of an electrohydraulic servovalve, comprising:

(a) means to define an open loop transfer function characteristic of said drive system, wherein said transfer function corresponds to a notch filter; and

(b) means to provide said characteristic with a closure rate of approximately no more than 6 db/octave with respect to a function

$$1/\beta = 1 - G_{cl}(S)$$

where $G_{cl}(s)$ corresponds to a closed loop transfer function of said drive system.

4,439,717

CONTROL DEVICE FOR A STEPPING MOTOR

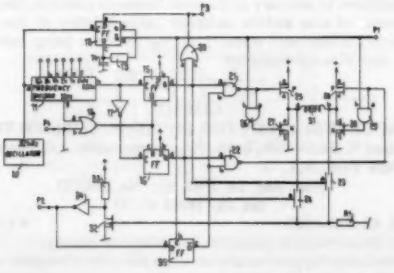
Jean-Claude Berney, Epalinges, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,951

Claims priority, application Switzerland, Feb. 4, 1981, 725/81

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **33 Claims**



1. A control device for a stepping motor provided with a coil and a rotor performing a rotary movement when a current passes through the coil, comprising means for supplying a

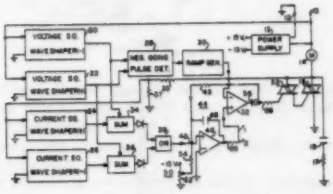
plurality of time base signals, means for producing pulses for controlling the motor in response to at least a part of said time base signals, means responsive to the control pulses for supplying the motor while maintaining the current in the coil at a substantially constant and given value during the control pulses, means for deriving a signal representative of the coil voltage signal, and analysis means for supplying, from the signal representative of the voltage signal, signal data concerning at least the voltage induced in the coil by the movement of the rotor.

4,439,718

MOTOR POWER CONTROL CIRCUIT FOR A.C. INDUCTION MOTORS

Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 28, 1981, Ser. No. 297,524
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—729 **10 Claims**



1. A power control system for an alternating current input to a load of the type which produces a phase difference between the load current and voltage waveforms, said system comprising:

means associated with the load circuit of the load for producing a first output signal related to the current flow through the load;

means connected to the load circuit of the load for producing a second output signal related to the voltage applied to the load;

means responsive to said first and second signals for producing a phase difference output signal proportional to the phase difference between the load current and load voltage;

means generating a preselected power factor command signal;

thyristor switching means connected in series with the load circuit of said load for controlling the power supplied to the load; and

control circuit means, responsive to said power factor command signal and said phase difference output signal, for generating control pulses for controlling switching of said switching means, said means for producing said first output signal comprising means for sensing the voltage waveform of said switching means and producing said first output signal responsive thereto.

4,439,719

VARIABLE TIMING CIRCUIT FOR MOTIVE POWER BATTERY CHARGERS

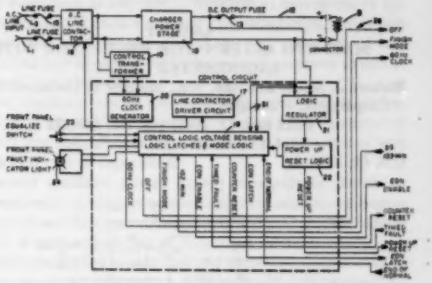
Frederic J. Lambert, Morrisville, Pa.; Donald J. Bosack, Barrington, and David K. Johansen, Lake in the Hills, both of Ill., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Jul. 9, 1982, Ser. No. 396,675
Int. Cl.³ H02J *7/04*
U.S. Cl. 320—31 **30 Claims**

1. In an apparatus for automatically charging a battery to a preselected full charge state at which the battery has a predetermined voltage/current state, said apparatus having charging means for charging the battery, and sensing means for sensing the state of the battery during charging thereof by said charging means, an improved charge control circuit comprising:

means for causing the charging means to charge the battery for an initial control time period;

means for establishing a plurality of different finish time periods;



means for determining the time at which the state of the battery reaches said predetermined voltage/current state during said initial control time period; and

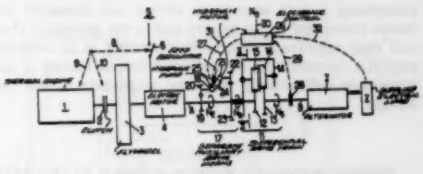
means for causing the charging means to continue to charge the battery after the determination of said time for one of said different finish time periods corresponding to said time determination.

4,439,720

UNITS FOR GENERATING CONSTANT-FREQUENCY ALTERNATING ELECTRIC ENERGY WITH SUBSTITUTE DRIVING MEANS

Jean-Claude Georges, Boulogne, France, assignor to Societe Aman, Bezons, France

Filed Jan. 23, 1981, Ser. No. 227,782
Int. Cl.³ H02K *7/02, 7/18;* H02P *15/00*
U.S. Cl. 322—4 **12 Claims**



1. An electrical alternator system capable of automatic transfer from being driven by one rotary drive means to being driven by another rotary drive means without substantial variation in the electrical output of the alternator, said system comprising:

an alternator;

a first rotary drive means having a first rotor element adapted to be rotationally driven by a first power source;

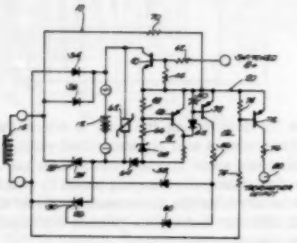
a differential drive train means having a first mechanical drive input connected to be driven by said first rotor element and a mechanical drive output connected to drive said alternator;

said differential drive train also having a second mechanical drive input through which additional mechanical energy can be combined with that coupled through the first input to said output;

auxiliary drive means connected to be driven by said first rotor element and to transfer a variable controlled amount of additional mechanical energy therefrom to said second input of the differential drive train means;

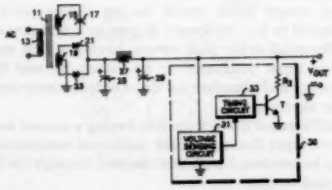
a flywheel mechanically coupled to said first rotor element;
a second rotary drive means having a second rotor element adapted to be rotationally driven by a second power source; and
coupling means for automatically coupling said second rotor element to said first rotor element in the event said first power source is interrupted.

4,439,721
MAGNETO ALTERNATOR REGULATOR WITH TACHOMETER OUTPUT
Richard J. Mura, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Feb. 12, 1982, Ser. No. 348,222
Int. Cl.³ H02P *9/00*; G02P *3/56*
U.S. Cl. 322—31 **12 Claims**



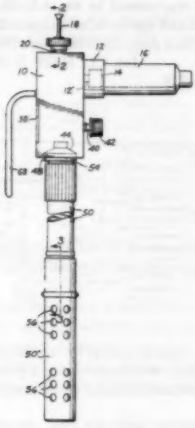
1. A magneto alternator regulator circuit for regulating charging of a battery by the output of the magneto alternator, said regulator circuit comprising first circuit means operative for connecting and disconnecting the battery in series with the alternator to allow or prevent charging of the battery, battery voltage sensing means coupled to said first circuit means for selectively rendering said first circuit means operative to disconnect the battery from being connected in series with the alternator to prevent charging of the battery, and tachometer output circuit means coupled to the magneto alternator and to said first circuit means, said tachometer output circuit means comprising a high impedance device and transistor switch means connected to the battery and to the alternator through said high impedance device for operating as an over-driven amplifier to provide a square wave output having a voltage magnitude substantially the same magnitude as the battery voltage.

4,439,722
FERRORESONANT POWER SUPPLY STABILIZER CIRCUIT FOR AVOIDING SUSTAINED OSCILLATIONS
Brian J. Budnik, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed May 3, 1982, Ser. No. 374,221
Int. Cl.³ G05F *3/06*
U.S. Cl. 323—248 **4 Claims**



1. A method for stabilizing the output of a ferroresonant power supply to avoid sustained oscillations comprising the steps of:
(1) sensing the output of said power supply,
(2) switching a load across the output of said power supply when an unstable output is detected, and
(3) rapidly removing said load when a predetermined minimum period of time has elapsed after a stable output is detected.

4,439,723
ULTRASONIC AND VHF LOCATOR OF ELECTRICAL SYSTEMS DEFECTS
Marvin O. Loftness, 115 W. 20th Ave., Olympia, Wash. 98501
Filed May 11, 1981, Ser. No. 262,115
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—52 **12 Claims**



1. An electrical systems defect locator, comprising:
a. a probe housing,
b. an ultrasonic transducer on the probe housing for receiving ultrasonic emissions and converting them to electrical output signals,
c. a VHF antenna on the probe housing for receiving VHF emissions
d. converter means on the probe housing for converting said electric output signals and VHF emissions to electric audio frequency signals,
e. an audio speaker on the probe housing connected to the output of the converter means, and
f. an elongated, hollow, electrically non-conductive pole connected at one end to the probe housing and communicating with the speaker,
g. the opposite end portion of the pole being arranged for grasping by the hands of an operator and having an opening therethrough for the exit of audible sound from the speaker.

4,439,724
APPARATUS FOR DETERMINING THE NUMBER OF TURNS OF A MAGNETIC COIL
William H. Morong, III, Newton, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.
Filed Nov. 28, 1980, Ser. No. 211,235
Int. Cl.³ G01R *31/02, 31/06*
U.S. Cl. 324—55 **7 Claims**

1. An instrument for determining the number of turns of a test coil wound on a magnetic core, comprising:
a reference core;
a reference coil wound on said reference core with a predetermined number of turns;
a first load coupled across said reference coil;

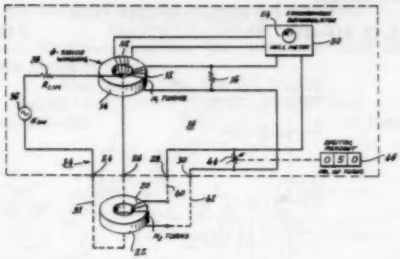
a second load of adjustable magnitude to be connected across the test coil;

means to couple the test coil to said instrument;

said coupling means comprising first means to connect primary winding means linking both of said cores in common;

said coupling means further including second means to connect the voltage on said test coil to said adjustable load;

means for supplying a-c current to said primary winding means;



the magnitudes of said first and second loads being set at values to operate both of said coils as heavily-burdened current transformers;

comparator means for comparing the a-c signals developed by said two coils; and

means for producing a measurement output corresponding to the value of said adjustable load when it has been set to produce a null between said a-c signals of said two coils.

4,439,725

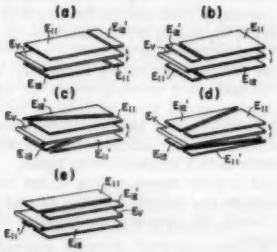
MICRODISPLACEMENT DETECTOR

Hiroomi Ogasawara, 3821-4, Yamakita, Yamakitamachi-gun, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 86,370, Oct. 18, 1979, Pat. No. 4,310,806. This application Nov. 10, 1981, Ser. No. 320,021

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **10 Claims**



1. A microdisplacement detector for detecting movement of an object comprising:

a sensor including (a) a movable electrode; (b) a first pair of stationary electrodes, the electrodes of said first pair of electrodes spaced from each other in parallel relationship with said movable electrode therebetween and spaced therefrom to form a first pair of capacitors, the capacitance of one capacitor of said first pair of capacitors increasing and the capacitance of the other capacitor of said first pair of capacitors decreasing as said movable electrode moves; (c) a second pair of stationary electrodes, the electrodes of said second pair of electrodes spaced from each other in parallel relationship with said movable electrode therebetween and spaced therefrom to form a second pair of capacitors, the capacitance of one capacitor of said second pair of capacitors increasing and the capacitance of the other capacitor of said second pair of capacitors decreasing as said movable electrode moves; and (d) means adapted for connecting said movable electrode for movement in response to movement of the object to cause the capacitances of the first capacitor of said first pair of capacitors and of the second capacitor of said second pair of capacitors to increase in response to movement of the object and the capacitances of the second capacitor of said first pair of capacitors and of the first capacitor of said second pair of capacitors to decrease in response to movement of the object;

a first oscillator circuit having incorporated therein as frequency varying components thereof said first capacitor of said first pair of capacitors and said first capacitor of said second pair of capacitors;

a second oscillator circuit having incorporated therein as frequency varying components thereof said second capacitor of said first pair of capacitors and said second capacitor of said second pair of capacitors; and

a mixer connected to said first and second oscillator circuits for providing a frequency difference signal determined by the difference in the frequencies of said first and second oscillator circuits.

4,439,726

PORTABLE MULTIMETER HAVING TWO SUBASSEMBLIES WITH A HINGE FOR FOLDING

Karl Hochreuther; Siegfried Heinze, both of Nuremberg, Fed. Rep. of Germany, and Werner Schoipp, Gries, Austria, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

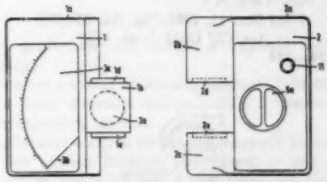
PCT No. PCT/DE79/00086, § 371 Date Apr. 22, 1980, § 102(e) Date Apr. 22, 1980, PCT Pub. No. WO80/00495, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 16, 1979, Ser. No. 184,253

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836679

Int. Cl.³ G01R *1/04, 15/12*

U.S. Cl. 324—156 **20 Claims**

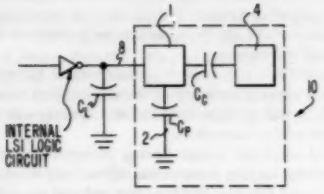


1. Portable multimeter, comprising an indicating subassembly for visualizing a measured value of a measuring variable to be examined, a processing subassembly for adapting the measuring variable to a quantity able to be visualized by said indicating subassembly, separate housings for said subassemblies being connected to each other and having edges facing away from the insides of said housings, said edges being swingable together for folding said housings together into a rest position, control and indicating parts to be protected being disposed at least partially inside of said housings in the rest position, terminals disposed on one of said housings for receiving data to be indicated, said housings containing a bead disposed in the vicinity of said edges being swingable together, said bead forming a hinge being hollow defining an interior space adequate for receiving additional control and indicating parts, said hinge including at least one interacting hinge element being integral with each housing and rotatably connecting said housings together.

4,439,727
LOW CAPACITANCE PAD FOR SEMICONDUCTOR CHIP TESTING

David H. Boyle, Manassas, Va., assignor to IBM Corporation, Armonk, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,707
Int. Cl.³ G01R 1/06
U.S. Cl. 324—158 R 6 Claims



1. A capacitively coupled contact pad on a large scale integrated circuit chip, comprising:

a semiconductor substrate including a circuit network having an input/output node, said substrate having a first insulating layer deposited thereon as part of said chip;

a lower conductive plate formed on the surface of said first insulating layer as part of said chip and in conductive contact with said node;

a second insulating layer deposited on said lower plate as part of said chip;

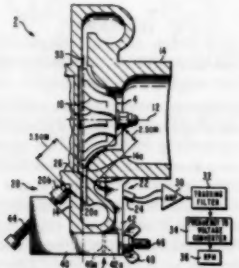
an upper conductive plate formed on the surface of said second insulating layer as part of said chip and juxtaposed with said lower plate, said second insulating layer forming a dielectric medium through which said upper plate is capacitively coupled with said lower plate;

whereby input/output signals can be transferred between said upper and lower plates by capacitively coupling through said second insulating layer.

4,439,728
MOTION SENSOR UTILIZING EDDY CURRENTS

James D. Rickman, Jr., Boxford, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,272
Int. Cl.³ G01P 3/46, 3/52
U.S. Cl. 324—164 9 Claims



1. Apparatus for measuring passage of a non-magnetic conductor part separated from the apparatus by a non-magnetic conductor shield within which said part passes, comprising in combination:

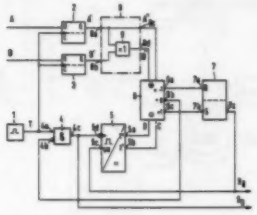
a bias magnet adapted to be positioned adjacent said shield for establishing a DC flux in said part; and

a transducer means adapted to be positioned adjacent said shield for producing a signal in response to eddy currents created in said shield due to passage of said part.

4,439,729
EVALUATION CIRCUIT FOR A DIGITAL TACHOMETER

Ulf Claussen, Wedel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,556
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114221
Int. Cl.³ H03K 5/26; G01P 13/04
U.S. Cl. 324—165 3 Claims



1. A evaluation circuit for a digital tachometer, the digital tachometer being of the type which produces first and second pulse trains having a frequency proportional to the speed of rotation, the pulse trains being phase-shifted in response to the direction of rotation, the evaluation circuit being of the type which converts the first and second pulse trains into a speed-proportional pulse train having four times the frequency of the first and second pulse train, and into a separate sign signal, the evaluation circuit further comprising:

clock terminal means for receiving a clock signal having at least four times the maximum frequency of the first and second pulse trains;

first and second signal memory means for receiving the first and second pulse trains, respectively, said first and second signal memory means being controlled by said clock signal, and producing at respective output terminals first and second memory means output signals, said memory means output signals, in combination, forming sequential binary numbers corresponding to predetermined combinations of the first and second pulse trains;

controllable switch means having a first input terminal connected to said clock terminal means for receiving said clock signal, a second input terminal for receiving a controllable switch means enabling signal, and an output terminal for producing said clock signal in response to said controllable switch means enabling signal;

bidirectional counter means having a first input terminal connected to said output terminal of said controllable switch means, for counting the negative flanks of said clock signal;

comparator means having a plurality of input terminals connected to respective output terminals of said first and second signal memory means and said bidirectional counter means, said comparator means further having a plurality of output terminals, each output terminal producing a respective output signal indicative of a predetermined deviation from a prior sequential binary number formed from said memory means output signals, first and second ones of said plurality of output terminals corresponding to deviations of "+1" and "−1", respectively, said comparator means further having a third output terminal for producing a signal indicative of coincidence of a binary number at said output terminals of said bidirectional counter means and said sequential binary numbers formed of said memory means output signals, said third output terminal being connected to said second input

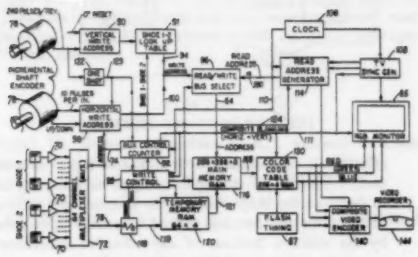
terminal of said controllable switch means for producing said controllable switch means enabling signal; and

sign means having first and second input terminals connected to said first and second output terminals, respectively, of said comparator means, and an output terminal for producing a signal indicative of the direction of rotation of the tachometer.

4,439,730
NONDESTRUCTIVE INSPECTION APPARATUS AND METHOD UTILIZING COMBINED INSPECTION SIGNALS OBTAINED FROM ORTHOGONAL MAGNETIC FIELDS

Glenn A. Kauffman, Pasadena, Tex., assignor to AMF Inc., White Plains, N.Y.

Filed May 8, 1981, Ser. No. 261,918
Int. Cl.³ G01N *27/72*; G01R *33/12*; G09F *9/30*
U.S. Cl. 324—232 **36 Claims**



1. The method of nondestructively inspecting a member of magnetic material comprising the steps,

establishing a first steady magnetic field component in a first direction through a given incremental region of the member,

establishing through said incremental region a second steady magnetic field component in a direction substantially transverse to said first direction,

detecting the magnitude of said first magnetic field component at the surface of said incremental region and producing a first signal in response thereto,

detecting the magnitude of said second magnetic field component at the surface of said incremental region and producing a second signal in response thereto,

combining the magnitudes of said first and second signals to obtain the sum thereof,

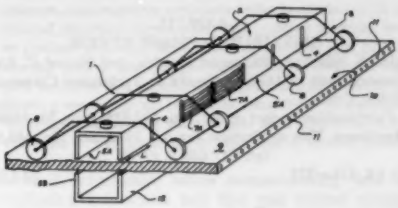
producing in response to said combined signals a representation of the magnitude of the combined signals.

4,439,731
MONITORING OF ELONGATE MAGNETICALLY PERMEABLE MEMBERS

Alexander Harrison, Beecroft, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia

Filed Oct. 8, 1980, Ser. No. 195,311
Int. Cl.³ G01N *27/82*; G01R *33/12*
U.S. Cl. 324—239 **25 Claims**

1. Apparatus for monitoring the integrity of an elongate magnetically permeable member having a longitudinal axis, said apparatus comprising a magnetically permeable yoke disposed in a plane substantially transverse to the longitudinal axis of said magnetically permeable member, said yoke having a substantially U-shaped transverse cross-section and a plurality of pairs of pole pieces formed by slots in said yoke, the poles of each pair of pole pieces lying in a direction substantially parallel to the longitudinal axis of said permeable member, one pole piece of each pair of said pole pieces carrying a field winding and the other pole piece of each said pair of pole pieces carrying a corresponding sensing winding; spacing means to maintain a substantially predetermined spacing between said elongate member and said pole pieces and to permit movement of said yoke relative to longitudinal axis of said

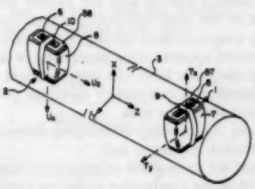


member; current generating means connected to said field windings to induce a time varying magnetic field passing through said elongate member between each said pair of pole pieces; and sensing means connected to said sensing windings to sense the voltage induced therein by said magnetic field.

4,439,732
ELECTRICALLY BALANCED FLUXGATE GRADIOMETERS

Victor W. Hesterman, Los Altos Hills, and William E. Drummond, Mountain View, both of Calif., assignors to Unied Scientific Corporation, Santa Clara, Calif.

Filed May 26, 1981, Ser. No. 266,826
Int. Cl.³ G01R *33/02, 33/04*; G01C *17/28*; G01V *3/165*
U.S. Cl. 324—247 **24 Claims**



20. A gradiometer for sensing a magnetic field gradient comprising,

a first sense winding for sensing magnetic field strength in a first sense direction and providing a first sense signal corresponding thereto,

a first balance winding for sensing magnetic field strength in a first balance direction orthogonal to said first sense direction and providing a first balancing signal corresponding thereto,

a second sense winding for sensing magnetic field strength in a second sense direction and providing a second sense signal corresponding thereto,

a second balance winding for sensing magnetic field strength in a second balance direction orthogonal to said second sense direction and providing a second balancing signal corresponding thereto,

means for rigidly connecting said first and second sense windings in spaced apart relation along a common axis with said first and second sense windings oriented such that said first and second sense directions are parallel and for rigidly connecting said first and second balance windings relative to said sense windings such that said first and second balance directions are orthogonal, and

combining means for combining a representation of said first and second sense signals and said first and second balancing signals to provide an output signal proportional to the difference between the magnetic field strength at said first

sense winding and the magnetic field strength at said second sense winding in directions parallel to said first and second sense directions, respectively, with unwanted components in said first and second balance directions cancelled.

4,439,733

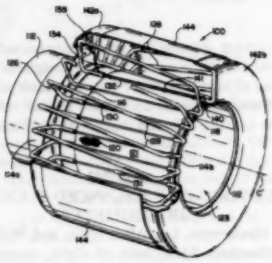
DISTRIBUTED PHASE RF COIL

Waldo S. Hinshaw, Richmond Heights, and Robert C. Gauss, Aurora, both of Ohio, assignors to Technicare Corporation, Solon, Ohio

Continuation-in-part of Ser. No. 182,525, Aug. 28, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,134

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—322 **22 Claims**



1. In a system for generating and detecting magnetic resonance in materials placed in the system for examination, the system having a magnet for providing a static magnetic field directed along a line or axis, the system generating magnetic resonance in the materials through their exposure to a radio-frequency magnetic field having components transverse to the axis, improved apparatus for generating or detecting the radio-frequency magnetic field, the improvement comprising:

(a) a plurality of conductive elements positioned in spaced relation about the axis;

(b) means for causing alternating currents to flow in the conductive elements; and

(c) means for setting the relative amplitudes of the currents in each of the conductive elements, there being at least one set of current amplitudes, generally different from one another and alternating at a radio frequency, which is able to generate a composite magnetic field transverse to the axis that is substantially uniform.

4,439,734

METAL OBJECT LOCATOR INCLUDING FREQUENCY SHIFT DETECTOR

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Jun. 23, 1980, Ser. No. 162,080

Int. Cl.³ G01V *3/11;* **H03L** *7/00*

U.S. Cl. 324—327 **18 Claims**

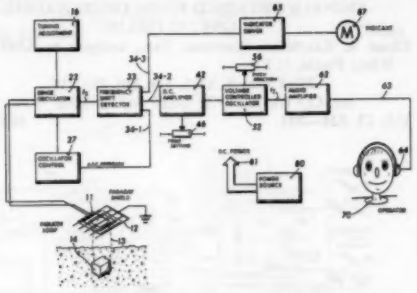
1. A metal detector apparatus, including in combination:

a. inducer means effective for producing an extensive electromagnetic field couplable with a metal object;

b. sense oscillator means having a first frequency determining means effectively coupled with said inducer means whereby a first signal is produced thereby having an instant frequency variably determined in part by the change in reactance of the inducer means wrought by the presence of the metal object;

c. frequency shift detector means coupled with said sense oscillator means, effective for receiving a said first signal produced therefrom and coupling same through a frequency responsive detector means including a tuned element means which is maintained resonant near a predetermined second frequency value; wherefrom an error signal is produced having a first level error signal when said first frequency and said second frequency are about the same, and a different second level error signal which is variously proportional to the magnitude of any variation of the said first frequency relative with the said second frequency as bounded by the difference between the resonant and off resonance responses substantially determined by the effective "Q" factor of the second frequency tuned element means;

d. frequency control means coupled with said sense oscillator means and said frequency shift detector means and



effective in combination with said error signal to continuously retune said first frequency signal determining means to decrease the magnitude of any proportional difference between the said first and second frequency signals shown by the relative increase of any effective difference between the error signal first and second levels;

e. indicant means coupled with said error signal effective to produce a telltale signal proportional to the instant error signal level; and,

f. source of d.c. power coupled at least with said several means comprising the apparatus for the operation thereof.

4,439,735

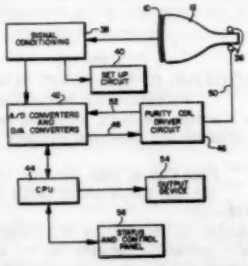
METHOD AND APPARATUS FOR TESTING LINE SCREEN CRT REGISTRATION

Armando Alvite, Chicago; Enrico D. Hines, Naperville, and Allan D. Kautz, Deerfield, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 17, 1981, Ser. No. 284,031

Int. Cl.³ G01R *31/22*

U.S. Cl. 324—404 **6 Claims**



5. For use with a CRT having a line screen on which phosphor stripe targets are deposited and at least one electron beam for exciting the phosphor stripe targets, a system for measuring misregistration between the electron beam and its phosphor stripe targets, comprising:

a plurality of light sensing devices situated at a corresponding number of selected test areas on the CRT screen;

means for positioning the electron beam to one side of its phosphor stripe targets encompassed within the test areas, and for incrementally stepping the electron beam across the targets in response to a control signal; said positioning means including a purity coil disposed around the neck of the CRT; and

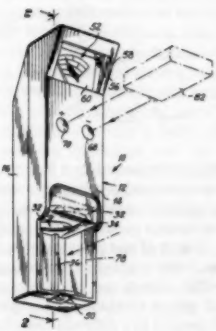
circuit means for developing the control signal for supplying current to said purity coil, for measuring the output of the light sensing devices when the electron beam is at one side of its phosphor stripe targets and after each incremental step of the electron beam to obtain a plurality of brightness readings at each test area, for storing the minimum and maximum brightness readings associated with each test area and data representative of the locations where each minimum and maximum reading occurred, for computing a preselected percentage of said stored maximum brightness readings, for storing the data representative of the locations where said preselected percentages of maximum brightness occurred by sensing the value of purity coil current at those locations and for determining, for each test area, the extent of misregistration based on the locations of the minimum and maximum brightness readings by converting the values of coil current to misregistration distances.

4,439,736

BATTERY TESTING SYSTEM

Frederick W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed May 13, 1981, Ser. No. 260,782
Int. Cl.³ G01N *27/46*
U.S. Cl. 324—437 **7 Claims**



1. An apparatus for indicating the condition of a plurality of portable power sources of different dimensions and voltages, comprising, in combination:

a housing having means for support thereof on a surface, said housing having a first interior transversely extending wall and a second interior transversely extending wall spaced from said first wall, said first wall in part forming an opening, said second wall being movable relative to said first wall,

a post connected to said second wall extending through said opening in said first wall, said post including means for preventing the escape of said post through said opening,

an electrically conductive compression spring positioned around said post between said first and second walls, said spring having first and second ends at said first and second walls respectively, a first electrical contact connected to said second wall and electrically connected with said second end of said spring,

a second electrical contact positioned in said housing spaced from said second wall,

said housing forming a single chamber defined in part by said second electrical contact as said second wall and by said second electrical contact, said housing forming a chamber opening, said chamber being adapted to receive through said chamber opening a first or a second portable power source of greater dimension than said first power source, said first and second power sources having positive and negative terminals on opposite sides of said power sources, said negative terminals being in contact with said second electrical contact and said positive terminal being in contact with said first electrical contact, said first and second power sources providing electrical communication between said second and third electrical contacts,

indicating means carried by said housing for providing a user with potential testing information with respect to and in response to the condition of said first or second portable power sources,

electrically conductive means communicating with said indicating means and said first and second electrical contacts;

said second wall and said first contact being movable from a rest position to a biased first position away from said second contact in response to the presence of said first portable power source in said chamber; said second wall and said first contact being further movable in a direction away from said second contact to a biased second position in response to the presence of said second portable power source in said chamber, and

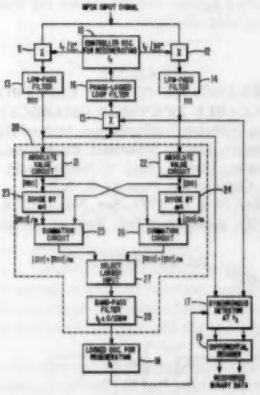
means connected to said housing for preventing said second wall from moving from said rest position toward said second electrical contact.

4,439,737

PHASE LOCKED LOOP, AS FOR MPSK SIGNAL DETECTOR

Anthony Mattei, Philadelphia, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1982, Ser. No. 370,580
Int. Cl.³ H03D *3/18, 3/24*
U.S. Cl. 329—50 **6 Claims**



1. In phase lock loop apparatus for phase-locking an oscillator to the amplitude variations accompanying phase transitions in the envelope of a bandwidth-limited complex waveform derived by synchronously detecting a phase-shift-keying signal, the improvement for approximating the amplitude of said envelope comprising:

means for determining the absolute value of the real component of said complex waveform;

means for determining the absolute value of the imaginary component of said complex waveform;

means for band-pass filtering to separate at least a portion of the first harmonic spectrum of keying frequency; and

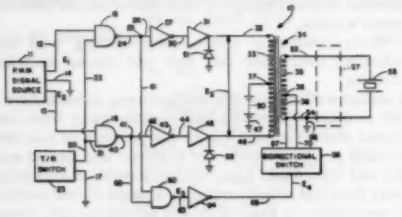
means responding linearly to at the least non-zero one of said absolute values for supplying input to said means for band-pass filtering, thereby to provide said approximation as the result of the subsequent band-pass filtering.

4,439,738

CLASS D PULSE WIDTH MODULATED AMPLIFIER

Jay W. Atherton, Seattle, Wash., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 12, 1981, Ser. No. 320,287
Int. Cl.³ H03F 3/38
U.S. Cl. 330—10 1 Claim



1. A ground referenced push-pull amplifier having a pair of inputs and including an output transformer, having primary and secondary windings, energizing a load;

a transducer conductively connected directly to said secondary winding;

means supplying to said inputs a pulse width modulated signal comprising a pair of trains of alternate pulses having a common repetition period, said pulses being of equal magnitude and of concurrently variable widths less than half of said repetition period;

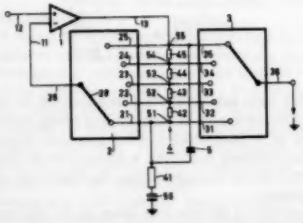
and means connected to the first named means short-circuiting turns of said secondary winding during intervals between successive pulses of said signal, whereby to protect said amplifier against said transients fed back from said load during said intervals.

4,439,739

CIRCUIT ARRANGEMENT WITH ELECTRONICALLY CONTROLLABLE TRANSFER CHARACTERISTIC

Ernst A. Kilian; Wilhelm Graffenberger, both of Hamburg, Fed. Rep. of Germany; Else C. Dijkmans, Eindhoven, and Rudy J. van de Plassche, Waalre, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,376
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132402
Int. Cl.³ H03G 5/04
U.S. Cl. 330—107 8 Claims



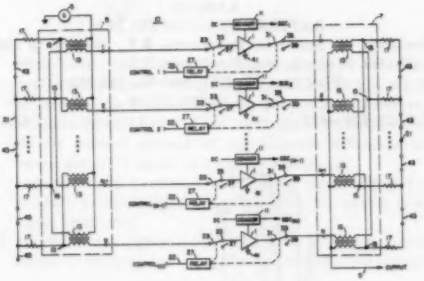
1. A bass-control circuit arrangement having an electronically controllable frequency transfer characteristic comprising, an amplifier having an inverting input and a non-inverting input and a controllable frequency-dependent negative feedback, a signal input terminal coupled to the non-inverting input of the amplifier, a signal output terminal, a frequency-dependent voltage divider including a resistor chain having a plurality of taps, means connecting said voltage divider to an output of the amplifier, a capacitor coupled between the amplifier output and a tap on the resistor chain, a first electronically controllable switch for selectively coupling said taps on the resistor chain to the inverting input of the amplifier, and a second electronically controllable switch for selectively coupling the taps on the resistor chain to the signal output terminal independently of the setting of the first switch, the resistor chain and capacitor being designed so that a signal voltage on at least some of the taps decreases as the signal frequency decreases.

4,439,740

CORPORATE AMPLIFIER APPARATUS WITH IMPROVED DEGRADATION

Timothy A. Harrington, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 1, 1982, Ser. No. 364,582
Int. Cl.³ H03F 3/68
U.S. Cl. 330—124 R 7 Claims



1. In an amplifying system including a power splitter means for receiving an input signal and dividing that signal to provide a plurality of power splitter outputs and normally including a plurality of balancing resistor positions, an amplifier associated with a different one of each of said plurality of outputs wherein each amplifier has an input coupled to one of said plurality of outputs and an amplifier output, and a power combiner means having a plurality of power combiner inputs with each input associated with and coupled to a different one of said amplifier outputs for combining the amplifier outputs and providing a combined output signal, wherein said combiner means normally has a plurality of balancing resistor positions, the improvement in said amplifier system comprising:

said power combiner means and power splitter means being constructed and arranged to have one of a substantially zero selected impedance at said balancing resistor positions and a substantially infinite selected impedance at said balancing resistor positions;

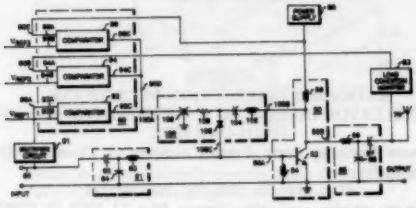
means coupled to each of said amplifiers for detecting faults in an amplifier and providing a fault signal representing a faulty amplifier; and

means responsive to said fault signal for selectively providing an electrical open circuit between the input of said faulty amplifier and its associated power splitter output and the output of said amplifier and its associated power combiner input when said selected impedance is substantially zero and for coupling the power combiner output associated with the input of said faulty amplifier and the power splitter input associated with the output of said faulty amplifier to a common terminal when said selected impedance is substantially infinite.

4,439,741
STABILIZED HIGH EFFICIENCY RADIO FREQUENCY AMPLIFIER

Harvey N. Turner, Jr., Tamarac, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1982, Ser. No. 392,919
Int. Cl.³ H03F 1/26
U.S. Cl. 330—149 **7 Claims**



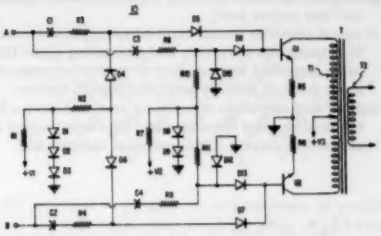
1. A radio frequency amplifier circuit comprising:
amplification means for amplifying radio frequency signals provided thereto, said amplification means having undesired feedback paths associated therewith;
sensing means, operatively coupled to said amplification means, for generating a sense signal which indicates when said amplification means is subjected to undesired operating conditions tending to cause oscillation of said amplification means;
stabilization circuit means, operatively coupled to said sensing means, for stabilizing said amplification means by dampening signals in said undesired feedback paths associated with said amplification means, said stabilization circuit means including at least one stabilization element, and
coupling means, coupled to said sensing means, for coupling said stabilization circuit means to said amplification means during periods of time when said sense signal indicates that said amplification means is being subjected to said undesired operating conditions and for decoupling said stabilization circuit means from said amplification means during periods of time when said sense signal indicates that said amplification means is not being subjected to said undesired operating conditions, such that said stabilization circuit means dampens signals in said undesired feedback paths and dissipates substantial RF power only during periods of time when said stabilization circuit means is coupled to said amplification means by said coupling means.

4,439,742
CIRCUIT FOR SIMULATING VACUUM TUBE COMPRESSION IN TRANSISTOR AMPLIFIERS

Jack C. Sondermeyer, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.

Filed Sep. 4, 1981, Ser. No. 299,565
Int. Cl.³ H03F 3/26, 3/68
U.S. Cl. 330—262 **13 Claims**

1. A circuit structure for driving a transistor amplifier to respond to an input signal in accordance with a predetermined clipping and soft cross-over characteristic comprising:
(a) first circuit means for generating first signals for driving said transistor amplifier in accordance with a first, clipping characteristic;
(b) second circuit means for generating second signals for driving said transistor amplifier in accordance with a second, cross-over characteristic; and
(c) combining means for combining said first and second signals and for generating a combined signal for driving

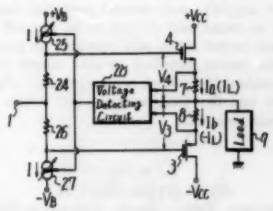


said transistor amplifier in accordance with said predetermined soft cross-over characteristic.

4,439,743
BIASING CIRCUIT FOR POWER AMPLIFIER

Manfred Schwarz, Grunbach, Fed. Rep. of Germany, and Tadashi Higuchi, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1981, Ser. No. 257,390
Claims priority, application Japan, Apr. 30, 1980, 55-58415
Int. Cl.³ H03F 3/26
U.S. Cl. 330—267 **42 Claims**



1. A biasing circuit comprising:
signal input means for supplying an input signal;
output transistor means including first and second output transistors for amplifying said input signal, each of said transistors including an output path and an input;
output resistive means including first and second resistive elements connected in series between the output paths of said first and second output transistors;
first and second variable current source means;
input resistive means connected between said first and second variable current source means for supplying said input signal to the inputs of said first and second output transistors; and
control means for detecting the voltage at one of said output transistor means and said output resistive means and for controlling at least one of said first and second variable current source means in response to said detection.

4,439,744
VARIABLE POWER AMPLIFIER

Mahesh Kumar, South Brunswick Township, Middlesex County, and Lakshminarasimha C. Upadhyayula, East Windsor, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 24, 1981, Ser. No. 334,258
Int. Cl.³ H03F 3/60; H03G 3/20
U.S. Cl. 330—285 **5 Claims**

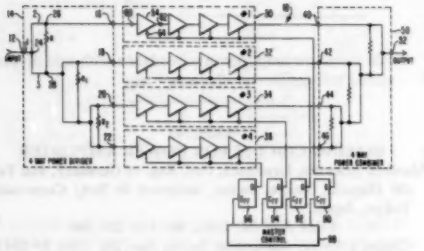
1. A variable power amplifier system comprising, in combination:

an in-phase power divider network having an input port for receiving thereat an alternating signal to be amplified in power and having N output ports;

an in-phase power combining network having N input ports and one output port;

N signal amplifier means coupled to respective ones of said N output ports to receive said alternating signal therefrom to be amplified and coupled to respective ones of said N input ports to provide amplified signals thereto;

each of said amplifiers comprising an active device having a terminal coupled to receive said alternating signal and also adapted to receive a bias potential thereat; and



logic means coupled to each said terminal for selectively supplying either a first or a second bias potential thereto, said first potential being of such value as to cause said device to amplify, said second potential being of such value as to cause said device to be cut off to thereby provide no output signal and consume no power;

whereby the power supplied to said output port of said power combining network is a function of which amplifiers are at said first bias potential and which are at said second bias potential.

4,439,745

AMPLIFIER CIRCUIT

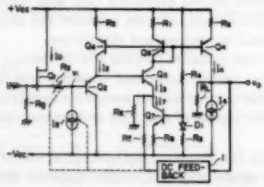
Kazuaki Nakayama, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 301,867

Claims priority, application Japan, Sep. 16, 1980, 55-128188

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—296 **6 Claims**



1. In amplifier circuit of the type including an input terminal for receiving an input signal, a first transistor having a base and providing an output, coupling means for coupling said input signal to the base of said first transistor, a second transistor of opposite conductivity type from said first transistor and having a base terminal receiving said output from said first transistor, an impedance element having one terminal coupled to a second terminal of said second transistor for determining circuit gain, and current supply means for supplying currents having a predetermined ratio to said first and second transistors, the improvement comprising:

a constant current source for producing at an output terminal a current substantially equal to a DC current flowing through said second transistor, said constant current source being connected in series with said second transistor with said current source output terminal being coupled to the connection point between said impedance element and second terminal.

4,439,746

EXTENDED INTERACTION MICROWAVE OSCILLATOR INCLUDING A SUCESSION OF VANES WITH ORIFICES

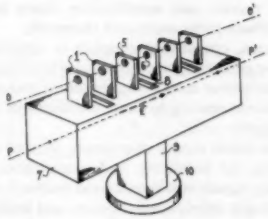
Bernard Epsztein, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 20, 1981, Ser. No. 265,375

Claims priority, application France, May 23, 1980, 80 11552

Int. Cl.³ H01J *25/36*; H03B *9/08*

U.S. Cl. 331—82 **13 Claims**



1. An extended interaction microwave oscillator comprising a periodic structure line constituted by a succession of vanes, which are traversed or lightly touched by a linear electron beam, wherein said line is placed over a linear cavity whose dimensions are determined in such a way that it behaves like a waveguide at the cut-off frequency, along the longitudinal axis of the line and on a transverse magnetic mode, TM_{mn} with m=1, 3, 5 etc. and n=1, 2, 3, 4 etc., coupling orifices are provided in the wall of the cavity between two successive vanes and at regular intervals, the anode voltage of the beam, the distances between two successive vanes and between two successive orifices being fixed as a function of the selected oscillation frequency for the oscillator, which is equal to the cut-off frequency of the cavity and finally a coupling device connected to the cavity makes it possible to tap the oscillator output energy of the cavity.

4,439,747

METHOD FOR IMPROVING SELECTIVITY IN CYLINDRICAL TE_{011} FILTERS BY TE_{211}/TE_{311} MODE CONTROL

Donald E. Kreinheder, Granada Hills, and Terrance D. Lingren, Canoga Park, both of Calif., assignors to Hughes Aircraft Co., El Segundo, Calif.

Filed Jun. 7, 1982, Ser. No. 385,947

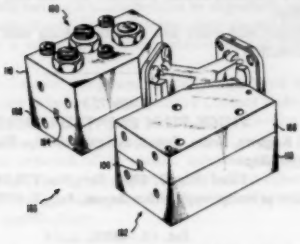
Int. Cl.³ H01P *1/207, 1/208, 1/16*

U.S. Cl. 333—208 **6 Claims**

1. A method for placing transmission nulls of a cylindrical cavity TE_{011} mode resonator at a desired frequency comprising the step of:

placing the output port of said cavity resonator at a selected

angular displacement with respect to the input port of said cavity resonator, said input and output ports lying in the



same plane substantially perpendicular to the longitudinal axis of said cylindrical cavity resonator.

4,439,748

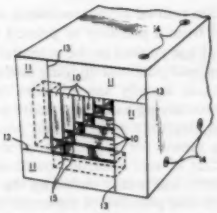
CORRUGATED WAVEGUIDE OR FEEDHORN ASSEMBLED FROM GROOVED PIECES

Corrado Dragone, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 28, 1982, Ser. No. 392,613

Int. Cl.³ H01P *3/123*

U.S. Cl. 333—239 **11 Claims**



7. A rectangular corrugated waveguide or feedhorn section comprising:

four plates comprising an electrically conductive material, each plate including a plurality of grooves of a predetermined depth and cross-section disposed in a line in a direction along a minor cross-sectional axis of the grooves in a major exposed surface of each of the four plates, the four plates being disposed relative to each other to form a hollow corrugated rectangular guie section with a predetermined sized passage therethrough such that the ends of the grooves in each of the plates both substantially meet and are essentially aligned with the ends of the grooves in a separate other plate of the four plates at each of the corners of the hollow guide section to provide a line of electrically conductive material at each of the corners of the passage through the guide section.

4,439,749

ELECTRONIC TUNING BLOCK

Hiroaki Komatsu, and Kenji Yoshioka, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

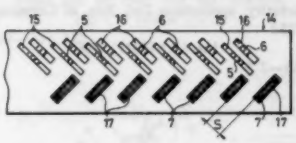
Filed Mar. 30, 1982, Ser. No. 363,471

Claims priority, application Japan, Mar. 31, 1981, 56-46204

Int. Cl.³ H03J *1/06, 1/08*

U.S. Cl. 334—7 **1 Claim**

1. In an electronic tuning device including a generally rectangular insulating substrate and a plurality of variable resistors each mounted to said substrate and having a shaft extending outwardly therefrom to a rotary knob fixed transversely to said shaft, and a cover adapted to be mounted over said resistors and having openings for receiving portions of said rotary knobs extending therethrough whereby said rotary knobs can be rotated by movement of a finger over the portions extending through said openings, the improvement wherein said



shafts are arranged in parallel on said substrate in positions oblique to the side edges thereof so that none of said rotary knobs will be in the path of movement of a finger actuating another of said rotary knobs.

4,439,750

ARMATURE HOLDING STRUCTURE AND HINGE WIRE SPRING USED THEREIN

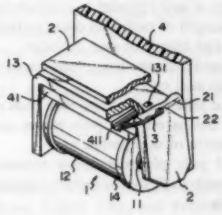
Kunihisa Fujii, Saku; Noboru Tomono, Usudamachi, and Yukio Shikano, Saku, all of Japan, assignors to Takamisawa Electric Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,038

Claims priority, application Japan, Apr. 21, 1981, 56-56634[U]

Int. Cl.³ H01F *7/08, 7/13*

U.S. Cl. 335—274 **2 Claims**

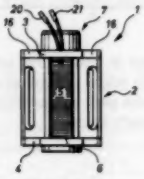


1. An armature holding structure using a hinge wire spring in an electromagnetic relay comprising a base block having a shelf formed perpendicular to said base block, an electromagnet having a core, a coil and a yoke, an armature and a hinge wire spring coupled to both said yoke and said armature, said yoke being fixed to said base block, a groove being formed in said shelf, wherein one end of said hinge wire spring is held in a hole in said yoke, the other end of said hinge wire spring is held in a hole in said armature, and the intermediate portion of said hinge wire spring passes through said groove in said shelf, along the side surfaces of said shelf, said yoke and said armature and over the outer surface of said armature, whereby the pivot support structure of said armature at the end of said yoke is maintained by said hinge wire spring.

4,439,751
DIRECT CURRENT ELECTROMAGNET

Christoph Gibas, Neunkirchen, Fed. Rep. of Germany, assignor to bso Steuerungstechnik GmbH, Sulzbach-Saar, Fed. Rep. of Germany

Filed Nov. 26, 1982, Ser. No. 444,697
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147058
Int. Cl.³ H01F 7/00
U.S. Cl. 335—278 **2 Claims**



1. An actuating magnet, particularly a direct current electromagnet, of the type having a circular cylindrical coil surrounding a pole body, comprising the combination of

a magnetic shell substantially surrounding the coil and forming a part of the exciting magnetic current for the electromagnet, said shell being formed from a single generally rectangular sheet of metal bent to form a substantially square cylinder,

means defining axially elongated openings through said shell, said openings being spaced apart so that they lie at the corners of said cylinder to facilitate bending thereof, the axial length of each said opening being greater than half the axial length of said cylinder,

the sides of said cylinder being bent concave outwardly to conform to said coil;

first and second pole plates at opposite ends of said cylinder;

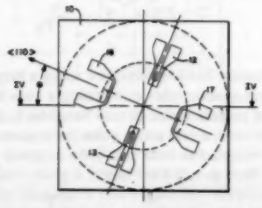
interengaging means on said pole plates and said shell to prevent rotation of said plates; and

means on said pole plates defining recesses adjacent the corners of said shell for permitting passage of fasteners therethrough.

4,439,752
SEMICONDUCTOR PRESSURE TRANSDUCER

James B. Starr, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 26, 1981, Ser. No. 314,650
Int. Cl.³ G01L 1/22
U.S. Cl. 338—2 **15 Claims**



1. A semiconductor pressure transducer comprising:

a single crystal semiconductor chip having at least one rectilinear edge oriented at an angle of substantially 22.5 degrees with respect to a <110> crystal direction of said chip;

a pair of radial stress sensors having a piezoresistive characteristic disposed on one surface of said chip; and

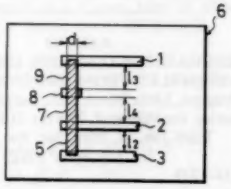
a pair of circumferential stress sensors having a piezoresistive chracterteristic disposed on said one surface of said chip;

wherein said pairs are oriented along said <110> cryst direction.

4,439,753
THICK FILM PRINTED CIRCUIT

Yoshii Kagawa, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1980, Ser. No. 175,956
Claims priority, application Japan, Aug. 7, 1979, 54-108812[U]
Int. Cl.³ H01C 1/14
U.S. Cl. 338—325 **4 Claims**

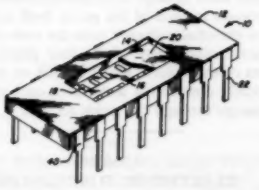


1. A thick film printed circuit including a potential dividing circuit formed from a plurality of printed resistance patterns for dividing voltage applied to the potential dividing circuit in the ratio of m:n, said potential dividing circuit comprising n+1 electrode patterns equally spaced from one another and a resistance pattern having a constant width printed transversely of each of said electrode patterns; said potential dividing circuit including means for applying a predetermined voltage between the first of said electrode patterns and the (n+1)th electrode pattern, and means including the (n+1−m)th electrode pattern in said plurality of electrode patterns for receiving a potential divided from said predetermined potential.

4,439,754
APERTURED ELECTRONIC CIRCUIT PACKAGE

Jean D. Madden, Jr., Warwick, R.I., assignor to Electro-Films, Inc., Warwick, R.I.

Filed Apr. 3, 1981, Ser. No. 250,763
Int. Cl.³ H01C 1/01
U.S. Cl. 338—320 **12 Claims**



1. An apertured electronic circuit package having two elements comprising:

a first substrate having a circuit pattern thereon and terminating in electrical terminals for connection to external circuitry, the substrate having an aperture therethrough and about the periphery of which a plurality of contact pads are arranged and respectively connected to intended paths of the circuit pattern;

a smaller substrate having a trimmable network thereon connected to a plurality of contact pads disposed on the

periphery of the smaller substrate wherein the dimensions of the smaller substrate are sufficient to occlude the aperture and to allow the smaller substrate contact pads to overlap the first substrate pads and said smaller substrate contact pads having a configuration in alignment with the contact pads of said first substrate when the smaller substrate is in a subjacent position relative to said first substrate;

the smaller substrate being mechanically supported by said first substrate wherein the respective contact pads of the smaller substrate also provide electrical connection to the contact pads of the first substrate;

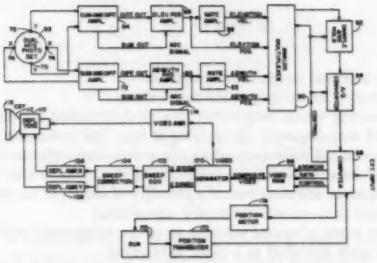
the trimmable network of the smaller substrate being visible and accessible through the aperture in the first substrate to permit trimming of the network to achieve an intended electrical specification.

4,439,755

HEAD-UP INFINITY DISPLAY AND PILOT'S SIGHT

Joseph A. LaRussa, Yorktown Heights, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,416
Int. Cl.³ G09G *3/00*; G01C *21/00*
U.S. Cl. 340—980 **23 Claims**



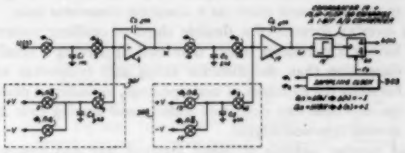
1. A system for presenting a head-up display to the pilot of an aircraft, comprising, data means for generating data, data processing means responsive to said data means for producing a video signal carrying an image of said generated data, video display means for displaying a video image of said data, a light transmitting waveguide having an optical length very much smaller than its physical length, secured, positioned, configured and dimensioned to receive at least a portion of the light rays of said video image and direct said light rays along its length to output means for reflection toward the eye of the pilot, and beamsplitter means positioned over the field-of-view of the pilot and positioned with respect to the output of said waveguide for reflecting the light rays leaving the output of said waveguide toward the pilot's eye and transmitting light from objects surrounding the pilot to the pilot's eye, light generating means for generating an optical signal indicating a line-of-sight of the pilot, detector means optically coupled to said light generating means for receiving said optical signal and detecting the line-of-sight of the pilot and producing signals carrying line-of-sight information, data processing means responsive to said detector means for generating a video signal carrying an image of the line-of-sight of the pilot, said video signal being coupled to said video display means to cause said video image to include an indication of the line-of-sight of the pilot, said optical signal being of a color different from said video image and wherein said detector means is housed within said video display means and said video display means comprises a dichroic beamsplitter which reflects said video image toward said waveguide and transmits said optical signal to said detector means, said detector means being moved by motor means to position the image of said light generating means at the center of said detector means, whereby the position of said detector means indicates the line-of-sight of the pilot.

4,439,756

DELTA-SIGMA MODULATOR WITH SWITCH CAPACITOR IMPLEMENTATION

Kishan Shenoi, Fairfield, and Bhagwati P. Agrawal, Shelton, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 20, 1982, Ser. No. 340,931
Int. Cl.³ H03K *13/20*
U.S. Cl. 340—347 AD **13 Claims**



1. A delta-sigma modulator for digitally encoding an analog signal, comprising:

means for generating a timing waveform having a frequency substantially higher than the highest frequency component of said analog signal;

sampling means including switching capacitance means for storing charge representative of instantaneous amplitude values of said analog signal said values being determined by the ratios of the values of a plurality of said capacitance means, and having an output;

lowpass filter means for performing an integration function on the output of said sampling means;

one-bit analog-to-digital converter means clocked by said timing waveform and providing first and second outputs in response to the instantaneous polarity of the output of said lowpass filter means, said second output being complementary of said first output;

reference means for selectively applying a charging voltage to said lowpass filter such that said capacitance means charges and discharges in non-overlapping intervals of time.

4,439,757

INTERCHANGEABLE KEYBOARD DEFINING MEANS

Raymond J. Gross, Culver City, and Fredrick W. Hogg, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 6, 1981, Ser. No. 319,001
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 VL **8 Claims**

1. Interchangeable keyboard defining means comprising:

a housing formed of an insulative material and defining a keyboard support;

a keyboard including a plurality of switches each including

a depressible key, said keys being arrayed in a common keyboard plane;

means retaining said keyboard in said keyboard support;

a retaining lip, supported by said housing, substantially surrounding said keyboard plane and overlying the periphery of said keyboard plane and extending and inwardly along said periphery for a predetermined distance defining a pair of openings formed by reduced inward extensions of said lip, said openings being oppositely positioned with respect to said keyboard plane on a common transverse axis;

an overlay formed of a flexible sheet of resilient material having a perimeter larger than said lip having a smaller dimension than the distance along said transverse axis between the extremes of said openings, including a plurality of visual key definition indicia and having first and second opposed edges;

said overlay capable of being inserted into and removed from a position overlying said keyboard by loose folding thereof along said transverse axis and insertion or removal of said first and second opposed edges of said overlay through said openings;

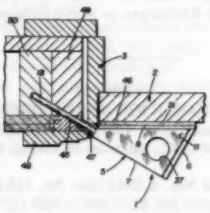
said retaining lip and said keyboard plane cooperating to retain said overlay in a fixed position with respect to said keyboard in all directions and in substantially flat relationship therewith.

4,439,758

COMBINATION DOOR LOCK AND ALARM

Richard E. Cantley, 1469 Shelley St., NE., North Canton, Ohio 44721

Filed Nov. 2, 1981, Ser. No. 317,457
Int. Cl.[3] G08B *13/08*
U.S. Cl. 340—546 **15 Claims**



1. An improved security device adapted to be mounted on a door frame adjacent the inside of an inwardly swinging door, and in which a hole has been formed in said frame, said device including:

(a) a housing having a surface adapted to be positioned closely adjacent the inside surface of the door to limit inward movement of the door when the device is mounted on the door frame;

(b) a rigid rod mounted on the housing and projecting outwardly therefrom, said rod being adapted to be inserted into the door frame hole to mount the security device on the door frame; and

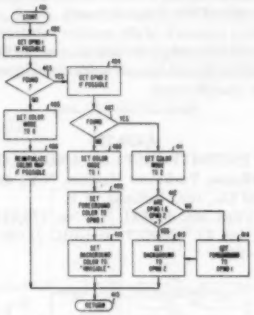
(c) an alarm mounted within the housing having an actuator projecting outwardly beyond said surface of the housing and engageable with the inside door surface when the security device is mounted on the door frame with said actuator being movable between alarm ON and OFF positions, whereupon the said housing surface will abutting engage the inside surface of the door to limit inward movement of the door and in which inward movement of the door will move the actuator to the alarm ON position to acuate said alarm.

4,439,759

TERMINAL INDEPENDENT COLOR MEMORY FOR A DIGITAL IMAGE DISPLAY SYSTEM

James R. Fleming, Indianapolis, Ind.; William A. Frezza, North Brunswick, and Gerald S. Soloway, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1981, Ser. No. 265,195
Int. Cl.[3] G09G *1/16*
U.S. Cl. 340—703 **10 Claims**



1. In a digital image display system:

a memory for storing color data values;

processing means responsive to a predetermined command and data sequence comprising at least one command, the processing means decoding the predetermined command and data sequence, the predetermined command and data sequence selecting one of a plurality of modes of access to color data values, the modes comprising

a first mode of access wherein an in-use foreground color is directly specified as a color data value;

a second mode of access wherein the in-use foreground color is specified as an index into the color memory; and

a third mode of access wherein the in-use foreground color and an in-use background color are specified as indexes into the color memory; and

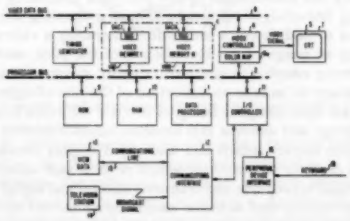
display means responsive to the processing means, the display means displaying the colors associated with the color data values accessed by the selected mode.

4,439,760

METHOD AND APPARATUS FOR COMPILING THREE-DIMENSIONAL DIGITAL IMAGE INFORMATION

James R. Fleming, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1981, Ser. No. 265,247
Int. Cl.[3] G09G *1/28*
U.S. Cl. 340—799 **18 Claims**



1. A digital image display system including a data processor (1), a video memory (4) for storing picture element data, and a

video controller (6) characterized in that the video memory comprises:

a plurality of memory modules (VM1-VMN), each memory module containing both picture element data for a video display (7) and associated priority value data indicative of a spatial depth relationship between picture element data in the memory module and picture element data in other of the plurality of memory modules; and

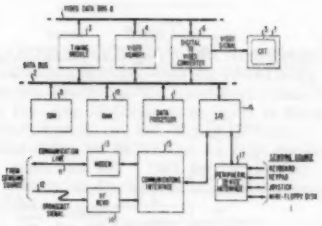
at least one bus arbitration circuit associated with the video memory, the bus arbitration circuit being responsive to the priority value data for controlling selection of the picture element data for displaying on the video display.

4,439,761

TERMINAL GENERATION OF DYNAMICALLY REDEFINABLE CHARACTER SETS

James R. Fleming, Indianapolis, Ind.; William A. Frezza, North Brunswick, and Gerald S. Soloway, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 19, 1981, Ser. No. 265,338
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—735 **17 Claims**



1. A communication terminal including a system for mapping characters onto a display, said system comprising

means for receiving from a sending source a generalized drawing instruction, in conjunction with a designated address, said generalized instruction specifying an image,

characterized in that the system also includes

means for translating each received generalized drawing instruction into a drawing instruction uniquely associated with said terminal display, each said unique drawing instruction operative, when presented to said display, for presenting to a viewer said image, and

means for storing said translated unique drawing instruction at said designated address locations within a graphic repertory.

4,439,762

GRAPHICS MEMORY EXPANSION SYSTEM

James G. Van Vliet, La Habra, and Frank M. Aralis, Irvine, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 334,807
Int. Cl.³ G09G *1/02*
U.S. Cl. 340—750 **7 Claims**

1. A memory expansion system for a display apparatus wherein the display apparatus includes display means for displaying a plurality of picture elements arranged in a matrix, the system comprising:

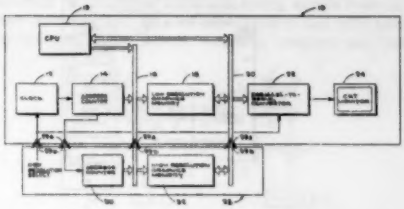
a primary memory including

primary memory means responsive to a first block of address codes for storing data at each address of the first block of address codes, the data corresponding at least to a portion of the picture elements of the display means,

clock means for generating a clock signal having a first predetermined clock frequency, and

first counter means for counting the clock signal to generate sequential address codes within the first block of address codes;

a memory expansion accessory adapted to be connected to the primary memory including expansion memory means responsive to a second block of address codes sequentially related to the first block of address codes for storing data at each address of the second block of address codes, the data corresponding at least in part to a second portion of the picture elements of the display means;



means for generating an expansion signal indicating that the memory expansion accessory is connected to the primary memory;

means responsive to the expansion signal for altering the clock signal frequency to a second predetermined frequency; and

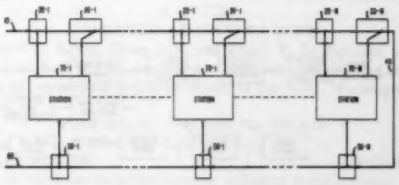
second counter means including the first counter means and responsive to the altered clock signal for generating the first and second block of address codes.

4,439,763

COLLISION AVOIDING SYSTEM AND PROTOCOL FOR A MULTIPLE ACCESS DIGITAL COMMUNICATIONS SYSTEM

John O. Limb, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 3, 1981, Ser. No. 298,954
Int. Cl.³ H04Q *9/00*; H04J *6/02*
U.S. Cl. 340—825.5 **25 Claims**



1. A method for controlling digital signals in a communications system, said system including a communications loop, a plurality of stations, at least two of said stations being respectively coupled to a first and a second signal path of said loop, said method including the steps of writing a first packet signal on said first path and reading a second packet signal from said second path and characterized in that said method further comprising the steps of

reading a third packet signal from said first path and

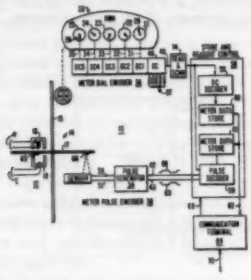
avoiding a collision on said communications loop in response to said third packet.

4,439,764

DUAL MODE METER READING APPARATUS

Theodore H. York, and Roger D. Moates, both of Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 9, 1981, Ser. No. 252,688
Int. Cl.[3] G08C 19/00, 19/16, 19/20
U.S. Cl. 340—870.02 6 Claims



1. A dual mode meter reading apparatus, comprising:

first meter encoder means for producing first meter reading values representing totals of a first predetermined value of a progressively increasing quantity to be measured;

second meter encoder means for producing repetitive indications of a second predetermined value of said quantity to be measured, said indications being produced at a rate proportional to the rate of increase in said quantity to be measured;

first data storage means selectively responsive to said first encoder means for storing said meter reading values occurring at predetermined times; and

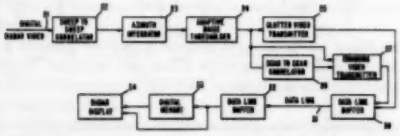
second data storage means receiving said first meter reading values occurring at a predetermined initial time and further being responsive to said second encoder means for incrementing said meter reading value occurring at said initial time by amounts proportional to said repetitive indications.

4,439,765

RADAR VIDEO PROCESSOR

Richard D. Wilmot, Buena Park, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Nov. 19, 1980, Ser. No. 208,356
Int. Cl.[3] G01S 13/86
U.S. Cl. 343—6 A 5 Claims



1. Apparatus for processing applied radar video signals derived from a radar receive to permit the use of a narrow frequency bandwidth data link to a radar display, said apparatus comprising:

video extraction means coupled to said radar receiver for removing random pulse interference and noise from the video signals;

first means coupled to said extraction means for transmitting radar clutter video signals, from preselected azimuth segments at selected time periods;

memory means coupled to said first means and to said radar display for storing said radar clutter video signals applied thereto and applying said stored signals to said radar display; and

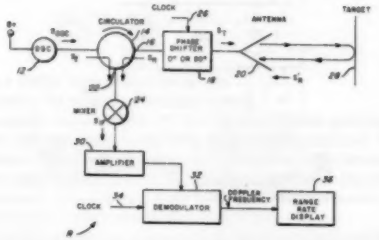
second means coupled to said video extraction means and said radar display for comparing said radar video signals applied thereto to time-averaged, scan-to-scan radar video signals computed thereby, and for transmitting said radar video signals to said radar display when the difference between the radar video signals and said time-averaged radar video signals is greater than a preselected value.

4,439,766

DOPPLER RADAR HAVING PHASE MODULATION OF BOTH TRANSMITTED AND REFLECTED RETURN SIGNALS

Herbert S. Kobayashi, Webster; Paul W. Shores, and Patrick Rozas, both of Houston, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,687
Int. Cl.[3] G01S 9/44
U.S. Cl. 343—9 R 10 Claims



1. A doppler radar system for detecting the range rate of an object at close range comprising:

(a) Local oscillator means for generating a radar signal;

(b) a single antenna for transmitting and receiving radar signals;

(c) means for phase modulating both the transmitted and returned signals with the same modulator and wherein said modulation occurs prior to any signal mixing;

(d) means for mixing the returned signal with the local oscillator signal to form an intermediate frequency signal;

(e) means for amplifying the intermediate frequency signal; and

(f) means for demodulating the amplified intermediate frequency signal to form a doppler signal indicative of the range rate of the object.

4,439,767

LIGHTWEIGHT OPTICAL JAMMER SYSTEM

Richard M. Hefley; Douglas R. Tomren, and Jerold L. Jacoby, all of Long Beach, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 28, 1981, Ser. No. 237,357
Int. Cl.[3] F41H 5/00; G03B 21/00; G01S 7/36
U.S. Cl. 343—18 E 1 Claim

1. A method of creating artificial glints from a satellite in earth orbit, comprising the steps of:

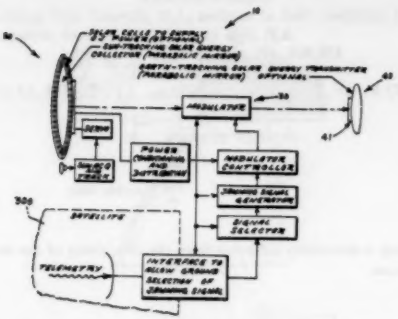
a. tracking the sun from said satellite;

b. collecting solar energy from said sun;

c. concentrating said collected solar energy;

d. imposing, on said concentrated solar energy, a modulation varying in amplitude and frequency;

e. tracking the earth from said satellite; and
f. directing the modulated solar energy to the earth;



whereby sunlight reflected from said satellite, and seen by an observer on earth, is altered and disguised, thereby deceiving said observer.

4,439,768

METALLIZED SHEET FORM TEXTILE MICROWAVE SCREENING MATERIAL, AND THE METHOD OF USE

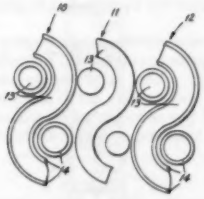
Harold Ebneth, Leverkusen, and Hans-Georg Fitzky, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 89,713, Oct. 30, 1979, abandoned. This application Jul. 7, 1981, Ser. No. 280,961

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847486

Int. Cl.³ H01Q *15/00*

U.S. Cl. 343—18 B **14 Claims**



1. In a method for screening microwave and high frequency radiation in the range of from 0.01 to 1000 GHz the improvement comprising using as a screening material, at least two layers of metallised filamentary woven textiles composed of synthetic polymers and/or natural fibers with the metal applied after activation thereof with a total metal layer thickness of from 0.02 to 2.0 μm by currentless wet-chemical deposition and having a high surface conductivity and being capable of attenuating waves by 30 to 40 dB and providing insulation between the individual metallised layers.

4,439,769

COMBINED ADAPTIVE SIDELOBE CANCELLER AND FREQUENCY FILTER SYSTEM

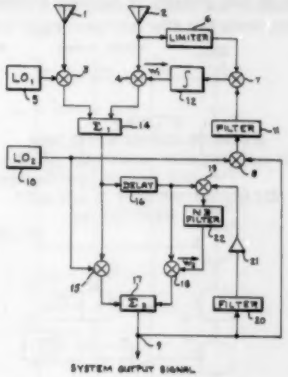
Raymond J. Masak, E. Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 2, 1975, Ser. No. 618,291

Int. Cl.³ G01S *3/16, 3/28*

U.S. Cl. 343—380 **2 Claims**

1. A combined adaptive sidelobe canceller and frequency filter system providing output signals free of broad band and narrow band interfering signals comprised of main antenna means, auxiliary antenna means, each receiving identical signals including interfering signals, a first mixer, a first local oscillator providing a first local oscillator signal of a first preselected frequency, said first mixer receiving said main antenna signals and said first local oscillator signal to provide a first mixer signal, second, third, and fourth mixers, a second local oscillator providing a second local oscillator signal of a second preselected frequency, said second mixer receiving said second local oscillator signal and said system output signals to provide a second mixer signal, first means to filter said second mixer signal at a first predetermined frequency for application to said third mixer, limiter means receiving signals from said auxiliary antenna means also for application to said third mixer to provide third mixer signals, means to integrate said third



mixer signals for application to said fourth mixer, said fourth mixer also receiving signals from said auxiliary antenna means to provide fourth mixer signals, a first summer receiving said first and fourth mixer signals to provide a first resultant signal, a fifth mixer receiving said first resultant signal and said second local oscillator signal and providing a fifth mixer signal, delay means receiving said first resultant signal to provide a preselected delay, a sixth mixer and seventh mixer, each receiving the delayed signal, said sixth mixer also receiving said system output signals to provide sixth mixer signals, means to narrow band filter said sixth mixer signals for application to said seventh mixer to provide seventh mixer signals, a second mixer receiving said fifth and seventh mixer signals to provide said system output signals therefrom.

4,439,770

CASCADED ADAPTIVE LOOPS

Bernard L. Lewis, Oxon Hill, and Frank F. Kretschmer, Jr., Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1976, Ser. No. 696,620

Int. Cl.³ G01S *3/16, 3/28*

U.S. Cl. 343—381 **2 Claims**

1. A sidelobe canceller system utilizing preprocessing to cancel multiple jamming interference signals, said system including a plurality of serially cascaded cancellation channels, said system comprising:

main-radar antenna means for receiving a radar signal;

a plurality of auxiliary antenna means for receiving signals from a jamming interference environment, one of said auxiliary antenna means constituting a first auxiliary antenna means;

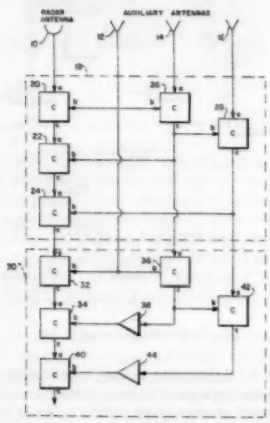
a plurality of serially connected cancellation channels each said cancellation channel including:

means for receiving and preprocessing the outputs of said plurality of auxiliary antenna means to decorrelate the outputs of said plurality of auxiliary antenna means;

a plurality of serially connected main channel cancellers, the first main channel canceller of the first cancellation channel receiving the output of said first auxiliary antenna means and said main radar antenna and the first serial main channel canceller of the remaining cancellation channels receiving the outputs of said first auxiliary antenna means and the output of the last main channel canceller of the proceeding cancellation channel, the remainder of said main channel cancellers of each cancellation channel receiving decorrelated auxiliary antenna outputs from said means for receiving and processing; and

a terminal cancellation channel including:

terminal means for receiving and preprocessing the outputs of said plurality of auxiliary antenna means to



decorrelate the outputs of said plurality of auxiliary antenna means;

a plurality of serially connected, terminal main channel cancellers, the first serial terminal main channel canceller receiving the output of said first auxiliary antenna means and the output of the last main channel canceller of the last serial cancellation channel, the remainder of said terminal main channel cancellers receiving the auxiliary antenna outputs from said means for receiving and preprocessing; and

a plurality of AGC means, each of which receives one of said auxiliary antenna outputs from said terminal means for receiving and preprocessing and provides an output to one of said terminal main channel cancellers.

4,439,771

GLASS ANTENNA SYSTEM FOR AN AUTOMOBILE

Masaharu Kume, Tokyo; Kenichi Ishii, and Takayasu Hokusho, both of Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

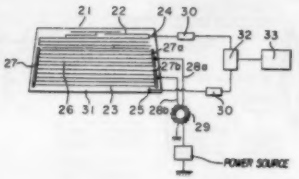
Filed May 14, 1982, Ser. No. 378,329

Claims priority, application Japan, May 15, 1981, 56-72913

Int. Cl.³ H01Q *1/32, 1/02*

U.S. Cl. 343—704 **7 Claims**

1. A glass antenna system for an automobile which comprises a main antenna disposed at an upper part of a glass plate for a rear window of the automobile, said main antenna being connected to a first antenna feeder line, a defogging electric heating element disposed below and separate from the main antenna and comprising a plurality of heating strips, a pair of bus bars for supplying electricity to the heating strips, a lead wire connected to a predetermined portion of the lowermost of said heating strips, a feeding point for connection to an antenna feeder line provided on the lead wire, and a second antenna feeder line connected to said feeding point whereby the defogging electric heating element constitutes a subsidiary antenna



having a directivity different from the directivity of the main antenna.

4,439,772

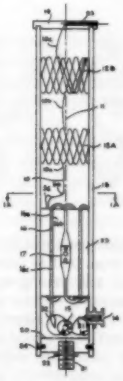
INDUCTOR TYPE HALF WAVE ANTENNA

Gerald W. Van Kol, 10651 Santa Lucia Rd., Monta Vista, Calif. 95014

Filed May 18, 1981, Ser. No. 264,855

Int. Cl.³ H01Q *9/32*

U.S. Cl. 343—749 **12 Claims**



1. A physically shortened electrically half-wave antenna for a communication frequency F_1 comprising:

an electrical conductor extending along an axis and having first and second ends and a total length equal to a multiple of the half-wave length for the frequency F_1;

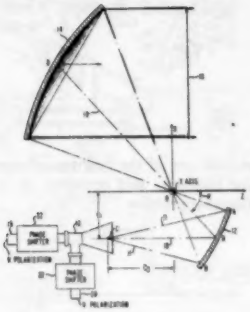
connector means connecting with the first end of said conductor; and

an inductor formed intermediate the ends of said conductor wherein a section of said conductor is convoluted to include a plurality of alternately repeating direction changes connected by substantially straight conductor segments and the convoluted conductor section is wrapped in a spiral configuration in a plane extending transverse to the axis such that substantially no straight segments of adjacent turns of said section lie parallel.

4,439,773
COMPACT SCANNING BEAM ANTENNA FEED ARRANGEMENT

Ta-Shing Chu, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 11, 1982, Ser. No. 338,352
Int. Cl.³ H01Q 19/12
U.S. Cl. 343—778 4 Claims



1. An antenna feed arrangement comprising:

a plurality of feed elements (10) disposed to form a linear phased array and capable of launching or receiving a wavefront at an aperture of the linear phased array where each of the feed elements comprises a small feedhorn which in combination with the other feed elements is capable of forming an approximate line source for generating a cylindrical wedge-shaped beam at the aperture of the linear phased array;

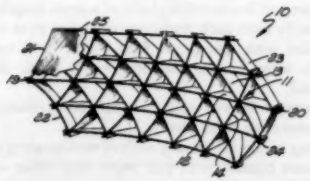
phase shifting means (22) connected to the plurality of feed elements for selectively producing a predetermined linear phase taper along the aperture of the linear phased array; and

a reflector (12) comprising a predetermined shape for bidirectionally reflecting the cylindrical wedge-shaped beam from the linear phased array into a converging beam toward a focal plane of the antenna feed arrangement to form an approximate point source at said focal plane from which a spherical wavefront is generated.

4,439,774
ANTENNA REFLECTOR WITH TRIANGULATED CELLULAR BACK STRUCTURE

Robert E. Johnson, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,441
Int. Cl.³ H01Q 15/16
U.S. Cl. 343—912 7 Claims



1. A structure for a radar reflector in which an accurately contoured reflection surface is provided, comprising:

a first set of elongated, parallel, spaced structural ribs each having a first edge adjacent to and shaped to said contoured reflection surface and each having a first dimension generally normal to said reflection surface, said first dimension being greater than a second dimension which is the thickness of said ribs in a direction substantially tangent to said contoured reflection surface;

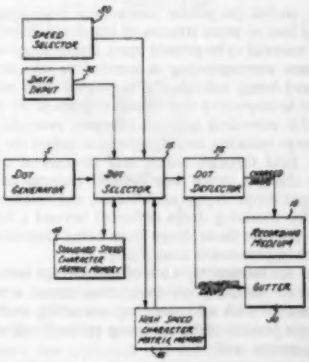
second and third sets of elongated, parallel, spaced structural ribs intersecting the ribs of said first set generally diagonally and meshing therewith by means of interlocking slots in said ribs at the points of intersection, said second and third rib sets intersecting said first set ribs in diagonally opposite senses such that a plurality of generally triangular included spaces are generated;

and a relatively thin conductive surface affixed at a plurality of points to said rib edges thereby forming said reflection surface, said ribs of said first, second and third sets being shaped along their first edges according to their respective positions and orientations within said structure to make said first edges congruent with said contoured reflection surface.

4,439,775
MULTIPLE SPEED PRINTER

Jerome L. Johnson, Lake Orion, Mich., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Mar. 1, 1982, Ser. No. 353,125
Int. Cl.³ G01D 15/18
U.S. Cl. 346—75 4 Claims



1. In a dot matrix printer having a recording medium and a means for forming dots in matrix positions on said recording medium to form characters on said recording medium, said dot forming means forming said characters by producing adjacent and parallel scans of seqentially formed dots on said recording medium, each of said scans being comprised of a column of potential dot positions and each of said scans requiring a scan time T to complete, and also having a means for producing relative movement at a speed S between said dot forming means and said recording medium in a lateral direction with respect to said dot scans, a method of printing at variable speeds, comprising the steps of:

changing the speed S of said relative movement between said recording medium and said dot forming means by a factor of Z;

providing character matrix memories corresponding to each change of speed S, each of said matrix memories having preprogrammed dot matrix position information for said character with the corresponding characters in each memory containing a different number of dot locations in each corresponding scan; and

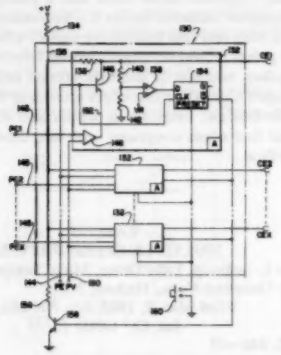
simultaneously changing the scan time T by a factor of 1/Z in response to said change in speed D said scan time reduced by changing the number of said dot locations in each scan by a factor of 1/Z.

4,439,776

INK JET CHARGE ELECTRODE PROTECTION CIRCUIT

Kenneth T. Zeiler, Richardson, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 24, 1982, Ser. No. 391,893
Int. Cl.³ G01D 18/00
U.S. Cl. 346—75 7 Claims



1. In an ink jet printer comprising print head means for forming one or more streams of ink drops directed toward a web of material to be printed upon, one or more charge inducing means corresponding in number to said streams of ink drops and being individually associated with and positioned adjacent to respective ones of said streams of ink drops, circuit means for providing selected charging potentials to each of said charge inducing means, deflection means for providing an electric field through which said streams of drops pass to deflect charged drops into defined trajectories and permit uncharged drops to pass undeflected, and catcher means positioned for receiving drops deflected beyond a defined trajectory to prevent those drops from being deposited upon said web, the improvement comprising:

means for monitoring each of said charge inducing means;

means for sampling said monitoring means at periodic time intervals with said sampling occurring during normally stable periods of the operating cycle of said charge inducing means; and

means responsive to said sampling means for clamping said circuit means when said sampling means indicates that said charge inducing means is defective whereby the charging potential provided to each of said charge inducing means is limited to approximately ground potential.

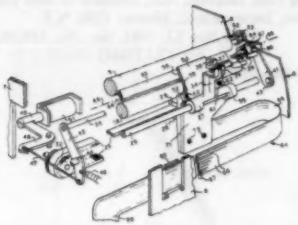
4,439,777

THERMAL SERIAL DOT PRINTER

Armando Aprato, Lugnacco, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Dec. 17, 1981, Ser. No. 332,102
Claims priority, application Italy, Dec. 23, 1980, 68970 A/80
Int. Cl.³ G01D 15/10
U.S. Cl. 346—76 PH 1 Claim

1. A thermal serial dot printer having a frame, a thermal printing head comprising a flat support carrying a column of thermal printing elements, an elongated flat platen for supporting the printing paper, a carriage for carrying said printing head, said carriage being slidably and rockably mounted on a shaft stationary on said frame and guided by a transverse bar, said shaft and said bar being parallel to said platen, said bar being spring urged toward said platen, means for reciprocally moving said carriage on said shaft and said bar along a printing line, a pair of rollers having the axis substantially parallel to said platen and located on opposite sides with respect to said printing line, a pair of bearings for mounting the two ends of each roller on said frame, and means for rotating said rollers at slightly different rates to keep the paper under tension on said platen, wherein the improvement includes an eccentric for



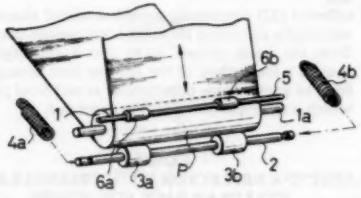
supporting at least one of the bearings of one of said rollers, and means for mounting said eccentric on said frame in an angularly adjustable position.

4,439,778

PEN TYPE PRINTING APPARATUS

Kyuichi Fujisawa, Tonan, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,095
Claims priority, application Japan, Jan. 21, 1981, 56-5857[U]
Int. Cl.³ G01D 15/24
U.S. Cl. 346—136 12 Claims



1. A pen type apparatus comprising:

(a) a paper feed roller adapted to be rotatively driven by a motor;

(b) a pair of side plates rotatably holding respective end portions of said paper feed roller;

(c) upper and lower roller shafts of a small length extending inwardly from each respective side plate so as to extend in parallel with said paper feed roller, both upper roller shafts being coaxial and both lower roller shafts being coaxial;

(d) pressing rollers of small diameters being rotatably carried by respective roller shafts;

(e) spring means for biasing each of said pressing rollers into pressure contact with said paper feed roller with a substantially equal force;

(f) a printing paper clamped at both of its marginal edges between said paper feed roller and said pressing rollers; and

(g) a pen carried by a carriage movable transversely of said printing paper and adapted to make a printing operation by a combination of the shifting of said carriage, feed of said printing paper and projection of said pen.

4,439,779

SERIAL DOT PRINTER FOR OFFICE MACHINES

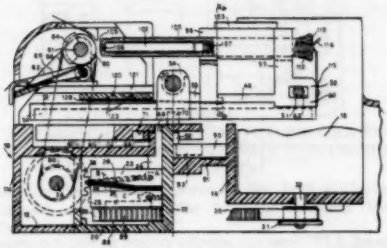
Michele Bovio, Brosso; Lino Sella, Banchette; Pierangelo Berruti, Chivasso; Walter Gillone, Ivrea, and Luciano Ceresa, Albiano, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

Division of Ser. No. 245,528, Mar. 19, 1981, abandoned. This application Dec. 7, 1981, Ser. No. 328,255

Claims priority, application Italy, Mar. 20, 1980, 67417 A/80; Feb. 2, 1981, 67134 A/81

Int. Cl.³ G01D *15/16*; B41J *3/02*

U.S. Cl. 346—140 R 13 Claims



12. A serial dot printer having a conductive ink housed in an insulated container including a nozzle, a counter electrode spaced from the ink on the opposite side of said nozzle, an operating circuit including at least a capacitor, a switch connected to said capacitor and controlled by a printing signal to supply said ink with printing voltage pulses, and a high voltage transformer having a primary coil connected to said switch and a secondary coil connected to the ink and to the counter electrode, said printing signal causing said capacitor to supply said primary coil with high intensity current pulses, said transformer having a voltage ratio of about 1:200 to generate output voltage pulses of about 2000 Volts, whereby said voltage pulses cause an electric ion discharge through said nozzle to eject particles of ink on the paper in a printing position.

4,439,780

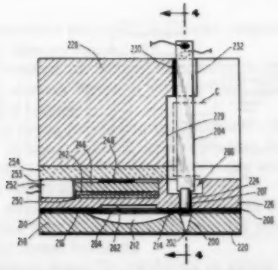
INK JET APPARATUS WITH IMPROVED TRANSDUCER SUPPORT

Thomas W. DeYoung, and Viacheslav B. Maltsev, both of Stormville, N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 4, 1982, Ser. No. 336,672

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 17 Claims



1. An ink jet comprising a chamber having an ink droplet ejection orifice, an elongated transducer coupled to said chamber for expanding and contracting along the axis of elongation in response to energization thereof so as to vary the volume of the chamber, the improvement comprising transducer support means including: p1 transducer mounting means coupled to the transducer remote from the chamber for substantially preventing longitudinal motion of the transducer along the axis of elongation at the mounting means;

transducer bearing means coupled to the extremity of the transducer adjacent the chamber for substantially preventing lateral motion of the transducer transverse to the axis of elongation at the extremity without substantially affecting longitudinal motion of the transducer along the axis of elongation at the bearing means;

said mounting means and said bearing means being mutually spaced and said transducer being substantially unsupported along the length thereof between said mounting means and said bearing means.

4,439,781

IMAGE RECORDING METHOD AND APPARATUS

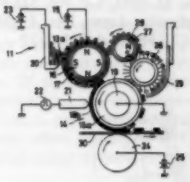
Takashi Yano, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jul. 27, 1981, Ser. No. 286,879

Claims priority, application Japan, Jul. 28, 1980, 55-103266; Sep. 24, 1980, 55-132514

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—153.1 12 Claims



3. An image recording apparatus comprising a moving donor member, an applicator disposed close to or in contact with the surface of the donor member for forming a uniform and thin toner layer on the donor member, means for applying a voltage across the applicator and the donor member, a recording electrode disposed in contact with the surface of the donor member and adapted to have a pattern signal applied thereto for defining on the toner layer formed on the donor member a charge pattern in accordance with the pattern signal, and means including a transfer roller disposed in contact with the surface of the donor member for transferring toner having the charge pattern onto a record medium disposed between the donor member and the transfer roller, the surface of said donor member having a resistance sufficient to prevent the charge applied to said toner layer from leaking appreciably from said toner layer.

4,439,782

SEMICONDUCTOR DEVICE WITH HETEROJUNCTION OF $Al_zGa_{1-z}As$—AlAs—GaAs

Nick Holonyak, Jr., Urbana, Ill., assignor to University of Illinois Foundation, Champaign-Urbana, Ill.

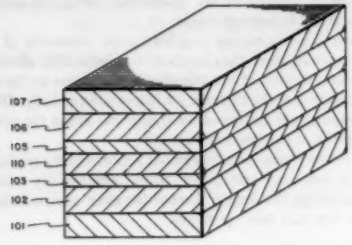
Filed Nov. 21, 1980, Ser. No. 209,240

Int. Cl.³ H01L *33/00*

U.S. Cl. 357—17 33 Claims

1. A semiconductor device, comprising a pair of aluminum gallium arsenide injecting/collecting layers having disposed

therebetween a layer of gallium arsenide; and a pair of barrier layers of aluminum arsenide respectively disposed at the interfaces between the layer of gallium arsenide and the layers of aluminum gallium arsenide.

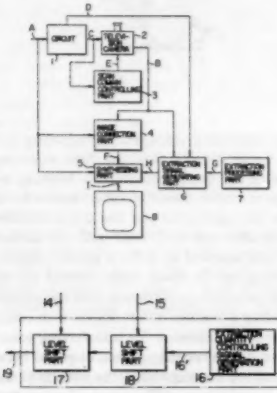


4,439,783

IMAGE SYNTHESIZING APPARATUS

Takuji Nishikawa, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 23, 1981, Ser. No. 323,979
Claims priority, application Japan, Dec. 3, 1980, 55-171217
Int. Cl.³ H04N *9/535, 5/22*
U.S. Cl. 358—22 **2 Claims**



1. An image synthesizing apparatus comprising:

means for supplying a first image signal;

means for supplying a second image signal produced by a camera, said camera employing a changeable scan domain;

synthesizing means for synthesizing an image output signal by combining said first and second image signals together with controlled amplitude ratios, said amplitude ratios being controlled by an extraction signal

means for supplying a D.C. extraction quantity control voltage; and

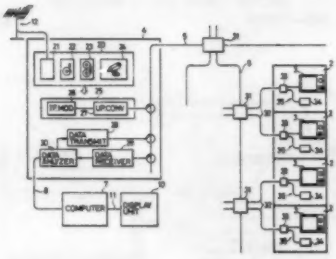
means for producing said extraction signal by superimposing upon said extraction quantity control voltage a voltage whose amplitude changes in accordance with changes in the shape of a scan domain employed by said camera.

4,439,784

POWER CUTTING DEVICE FOR TERMINAL UNITS OF CATV SYSTEM

Hajime Furukawa, and Yoshitsugu Ohta, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,206
Claims priority, application Japan, Sep. 26, 1979, 54-123549
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—86 **3 Claims**



1. In a CATV system in which a central facility is connected through cables to a plurality of terminal units so that various television programs are transmitted from the central facility through the cables to the terminal units, said television sets being supplied with power from a power supply, the improvement comprising a system for shutting off power to selected terminal units to insure that the selected terminal units can not be used, said system comprising:

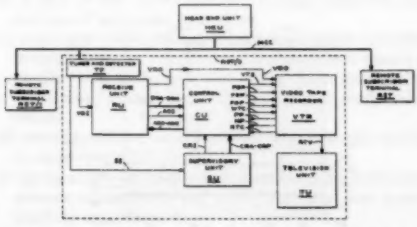
a down-data transmitter provided in said central facility for periodically sending a down-data signal containing at least a power cutting instruction and an address number of said terminal unit, a down-data receiver provided in each of said terminal units for receiving said down-data signal and a power cutting device provided in each of said terminal units, said power cutting device being responsive to said data received by said down-data receiver to cut the power supply to said television sets when the address information contained in said down-data signal is coincident with its own address.

4,439,785

SUBSCRIBER TELEVISION SYSTEM

Eugene Leonard, Port Washington, N.Y., assignor to VVR Associates, Roslyn, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,125
Int. Cl.³ H04N *7/16*
U.S. Cl. 358—120 **10 Claims**



1. In a video recorder having a first transducer which moves with respect to a moving record medium to selectively record and play back video information, the record medium having a control region which is accessed for recording or playback by a second transducer wherein during playback signals recorded on the control region are utilized for synchronizing the relative

movement between the first transducer and the second transducer and the record medium, the improvement comprising storing means external of said record medium for storing first coded indicia, and generating means responsive to said storing means and connected to the second transducer for generating second coded indicia to be recorded in the control region simultaneously with the recording of video information by the first transducer, provided the second coded indicia has a predetermined relationship with the stored first coded indicia.

4,439,786

APPARATUS AND METHOD FOR PROCESSING TELEVISION PICTURE SIGNALS AND OTHER INFORMATION

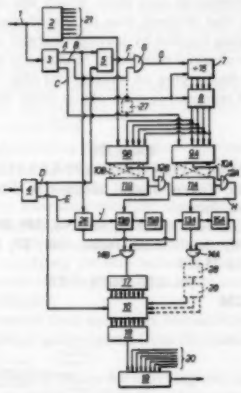
Gyongyver Claydon, and Gordon D. Iles, both of Chelmsford, England, assignors to The Marconi Company Limited, Chelmsford, England

Continuation of Ser. No. 79,986, Sep. 28, 1979. This application Nov. 10, 1981, Ser. No. 320,058

Claims priority, application United Kingdom, Sep. 29, 1978, 38677/78

Int. Cl.³ H04N 5/04

U.S. Cl. 358—148 18 Claims



1. Information processing apparatus comprising

digital memory means;

writing means for writing information in digital form into said memory means at writing times depending on first timing signals;

reading means for reading the information out of said memory means at reading times depending on second timing signals which drift in and out of phase with respect to the first timing signals; and

delay means for delaying at least some of the writing times so that they do not coincide with the reading times, said delay means including

comparator means for producing an output signal in accordance with the phase difference between the first and second timing signals, and

a variable delay device for delaying the writing times by varying delay periods in accordance with the output signal from said comparator means.

4,439,787

AFT CIRCUIT

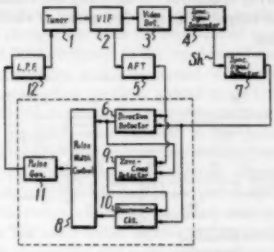
Takao Mogi, Tokyo; Kouji Morita, Kodaira, and Osamu Matsunaga, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 17, 1982, Ser. No. 349,651

Claims priority, application Japan, Feb. 19, 1981, 56-22534; Feb. 20, 1981, 56-24539

Int. Cl.³ H04N 5/50

U.S. Cl. 358—195.1 17 Claims



1. Automatic fine tuning circuit for controlling a heterodyne tuning stage of a television receiver in which a local oscillator generates a local oscillator signal at a tunable local oscillator frequency to be mixed with a broadcast-frequency video signal to which the receiver is to be tuned to produce a video IF signal constituted by a video information signal carried on a video IF carrier having a video IF frequency, comprising:

frequency discriminator means having an input receiving said video IF signal and an output providing an AFT signal representing any departure of the video IF frequency from a predetermined frequency and which is present only when said video IF frequency is within an AFT capture range defined by predetermined frequency limits;

detecting means for detecting the existence of a synchronizing signal occurring in said video information signal and providing a detecting signal indicative of the presence of such synchronizing signal; and

control means for selectively generating control signals supplied to said local oscillator in response to said AFT signal and said detecting signal; said control means generating a first control signal to control the local oscillator frequency in accordance with said AFT signal whenever said AFT signal is present, said control means generating a second control signal operative to increase the local oscillator frequency when said AFT signal is not present and said detecting signal is detected to be present and said control means generating a third control signal operative to decrease the local oscillator frequency when said AFT signal is not present and said detecting signal is not present.

4,439,788

VIDEO IMAGING APPARATUS HAVING A PLIANT CLOCK

Wayne W. Frame, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jan. 27, 1982, Ser. No. 343,385

Int. Cl.³ H04N 3/14

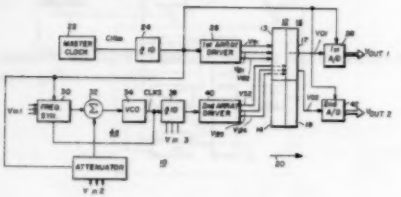
U.S. Cl. 358—213 22 Claims

1. An improved multisensor video imaging apparatus of the type using plural linear arrays of elemental electrical transducers nominally fixed with respect to one another with each array's longitudinal axis functionally oriented in a "cross track" direction substantially perpendicular to a "track axis" along which the arrays are simultaneously moved relative to a scanned area so as to successively scan, in nominal synchro-

nism, corresponding common incremental portions of that area, said improvement comprising:

first and second linear arrays of elemental electrical transducers, each elemental transducer being capable of generating an electrical signal representative of its incident illumination and each array being capable of sampling and reading out a series of respectively corresponding electrical signals in response to applied clock signals;

master clock means for providing master clock signals and first arrayed driver means connected thereto and to said first array to control the sampling and reading of electrical signals output from said first array of electrical transducers; and



a controlled oscillator circuit means for providing pliant clock signals and second array driver means connected thereto and to said second array to control the sampling and reading of electrical signals output from said second array of electrical transducers;

said controlled oscillator circuit means being connected to said master clock means for nominal control by said master clock signal but also having at least one supplemental control signal input for controllably varying the timing of said pliant clock signals with respect to said master clock signals so as to controllably maintain desired synchronism with respect to said cross-track axis between the sampling and reading of electrical signals output from said first and second arrays of electrical transducers.

4,439,789

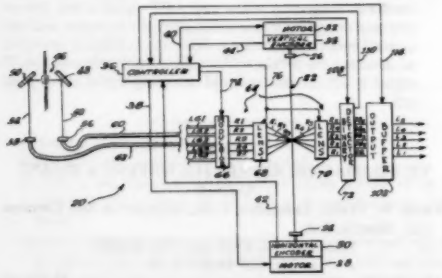
BINARY SCAN SYSTEM

Lysle D. Cahill, Dayton, Ohio, assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Apr. 11, 1980, Ser. No. 139,464

Int. Cl.³ H04N *1/00, 1/028, 1/40*

U.S. Cl. 358—256 **52 Claims**



1. A method of reproducing a continuous tone original image on an electrophotographic member with an array of discharged elements of such configuration and placement to enable the member to be utilized for producing a graphic image upon a receptor by printing, the original image having a relative density and being comprised of a plurality of individual information forming structures having a size and a configuration, said structures being irregularly spaced apart in said image, the method comprising:

A. moving a sensor and the original image relative to one another in a predetermined pattern with the sensor sensing one by one the presence and absence of individual ones of the information forming structures of the original image in sequential incremental areas thereof;

B. producing from the sensor a series of binary data bits with each bit binarily representing a sensed density value of individual ones of said information forming structure in one incremental area of the original image and the series of bits being representative of the entire original image;

C. the sensor including at least one aperture through which the density values of individual ones of the structures in incremental areas of the original image are sensed and further including at least one threshold level value signal of the sensed density values such that a sensed density value above the threshold value signal produces a bit of one sense and a sensed density value below the threshold value signal produces a bit of the other sense;

D. adjusting at least one of the aperture and the threshold level value of the sensor to produce a statistically valid count of the series of binary data bits corresponding to the relative density of the original image; and

E. imaging the electrophotographic member essentially to reproduce the proper location of and the presence and absence of individual ones of the information forming structures of the continuous tone original image on the member by forming on a charged suface of the member a binary element for each binary data bit in the series of binary data bits, each element being formed in an incremental area of the member surface corresponding to the sensed incremental area from which the binary data bit producing that element was produced, and each binary element being formed by leaving charged an incremental area of the charged member in response to a bit of the one sense and discharging an incremental area of the charged member in response to a bit of the other sense.

4,439,790

IMAGE FORMING APPARATUS

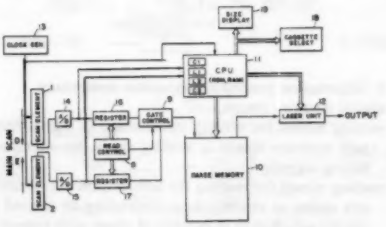
Tadashi Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1982, Ser. No. 339,282

Claims priority, application Japan, Jan. 23, 1981, 56-8614; Feb. 16, 1981, 56-21236

Int. Cl.³ H04N *1/32*

U.S. Cl. 358—256 **18 Claims**



1. An image forming apparatus, comprising:

means for reading an original and providing corresponding image information;

a recording unit for recording an image on a recording sheet according to the image information provided from said reading means;

identifying means for identifying the size of the original according to the output signals from said reading means; and

selecting means for selecting a recording sheet size in said

recording unit according to the identified size of the original.

4,439,791

SLOW-MOTION REPRODUCING SYSTEM IN AN APPARATUS FOR REPRODUCING ROTARY RECORDING MEDIUM WITH MODE DEPENDENT SKIP PULSE GENERATOR AND FIELD MEMORIES

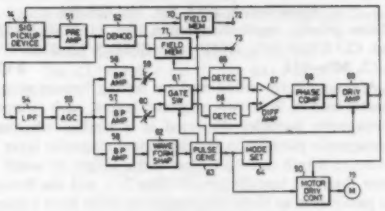
Atsumi Hirata, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 23, 1981, Ser. No. 246,722

Claims priority, application Japan, Mar. 21, 1980, 55-35855

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—342 **6 Claims**



1. A slow-motion reproducing system in an apparatus for reproducing video signals from a rotary recording medium on which said signals of a plurality of fields each are recorded along a spiral track for every interval corresponding to one revolution of the medium, said system comprising:

a reproducing element for tracing along the track of the rotary recording medium and reproducing the signals recorded therealong;

means operating in response to skip pulses applied thereto to cause the reproducing element to shift and skip to an adjacent track turn;

means for generating skip pulses corresponding to modes in which slow-motion reproduction differing from normal reproduction is carried out every period of revolution of the rotary recording medium, said skip pulses being thus generating with timing corresponding to the vertical blanking period positions of the recorded video signals, and for supplying the skip pulses to the skip means;

means for demodulating the signal reproduced by the reproducing element;

first and second field memories respectively supplied with demodulated video signals from the demodulating means; and

operation control means for carrying out operation control of the operations of recording of the demodulated video signals respectively in the first and second field memories, reproducting of the video signal thus recorded, and erasing of the recorded video signals,

the skip pulse supplying means operating at the time of 1/m-speed (where m is a natural number greater than 2), forward-direction, slow-motion reproduction to supply skip pulses for causing the reproducing element to skip at one specific position among the plurality of vertical blanking period positions per track turn so as to cause the reproducing element to trace the same track turn every (n−1) revolutions of the rotary recording medium and thereafter ceasing to generate the skip pulses in the succeeding one revolution, and operating at the time of 1/n-speed, backward-direction, slow-motion reproduction to respectively supply skip pulses for causing the reproducing element to skip continually in the position of the vertical blanking period at said specific position and skip pulses for causing the reproducing element to skip every specific number of revolutions of the rotary recording medium at the position of the vertical blanking period at a specific position other than said specific position per track turn,

the operation controlling means operating to appropriately select any mode of operation control from among: a first mode in which one of the two field memories operates within the period of one revolution of the rotary recording medium to carry out, in sequence, erasing, recording of the reproduced video signal, and reproducing of the recorded signal of that memory, while the other field memory operates to carry out, in sequence, reproducing of the memory recorded signal, erasing, and recording of the reproduced video signal; a second mode in which there is a changeover from the reproduced output of said one of the fielu memories to the reproduced output of the other field memory within the period of one revolution of the rotary recording medium; a third mode in which said one of the field memories continues to reproduce the memory recorded signal thereof in the period of one revolution of the rotary recording meidum; and a fourth mode in which said other field memory continues to reproduce the memorized signal in the period of one revolution of the rotary recording medium, and operating to cause the recorded video signals corresponding to one field to be alternately and repeatedly produced as output from the first and second field memories at every field over said plurality of fields.

4,439,792

SWING ARM ARRANGEMENT FOR A MAGNETIC DISC STORAGE APPARATUS

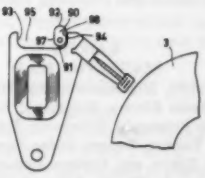
Oelke van de Bult, The Hague, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,300

Claims priority, application Netherlands, May 22, 1981, 8102524

Int. Cl.³ G11B *5/55*

U.S. Cl. 360—106 **8 Claims**



1. A swing arm arrangement for moving and positioning a magnetic head over a surface of a rigid rotatable magnetic disc of a magnetic disc store for digital data, the arrangement comprising:

a stationary frame;

at least one swing arm pivotally mounted to the frame about an axis for movement between a first position and a second position, the arm including an end remote from the pivotal axis and also including a pair of opposed walls connected to the end, the walls having mutually facing sides forming a recess therebetween;

a magnetic head connected to the arm near the end;

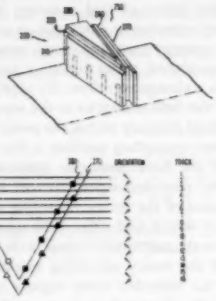
means for stopping the pivotal movement of the arm at the first and at the second positions, the stop means including a stop connected to the frame and disposed in the recess, the stop having a first pair of opposite sides disposed on a first axis lying in a plane perpendicular to the pivotal axis, the stop sides cooperating with respective wall sides so that the pivotal movement of the arm is stopped at the first and at the second positions.

4,439,793

THIN FILM HEAD ARRAY

Charles Nater, Saratoga, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 22, 1981, Ser. No. 313,841
Int. Cl.³ G11B 5/28, 5/48
U.S. Cl. 360—121 15 Claims



1. A magnetic recording and reproducing thin film head array, comprising:

a plurality of recording and reproducing thin film heads, said heads being arranged into first and second assemblies with each assembly including at least one stack with each stack including a plurality of said heads arranged in a close packed manner;

each stack of said first assembly having its heads aligned so as to be parallel to a first straight line, each stack of said second assembly having its heads aligned so as to be parallel to a second straight line, said first and second straight lines intersecting to form an angle between 3° and 15°;

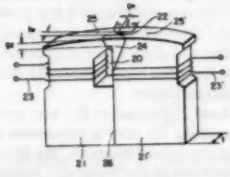
each stack of said first assembly being positioned relative to each stack of said second assembly such that gaps of heads of said first assembly interleaf with respect to gaps of heads of said second assembly relative to a widthwise direction of a recording medium to form a plurality of adjacent tracks in said recording medium.

4,439,794

MAGNETIC HEAD

Yoshihiro Shiroishi, Higashimurayama; Hideo Fujiwara, Tachikawa; Takeshi Kimura, Kokubunji; Noriyuki Kumasaka, Ohme; Nobuo Kobayashi, Kokubunji; Takeo Yamashita, Hachioji; Teizo Tamura, Katsuta; Hideo Zama, Yokohama; Mitsuhiro Kudo, Tokyo, and Tsutomu Iimura, Tachikawa, all of Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., both of Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,706
Claims priority, application Japan, May 16, 1980, 55/63938
Int. Cl.³ G11B 5/251, 5/14
U.S. Cl. 360—127 11 Claims



1. A magnetic head characterized in that at least one of two magnetic blocks of high permeability facing each other via a gap consists of single crystal Mn-Zn ferrite containing up to 7% by weight of SnO_2 that is occluded therein without being allowed to separate thereby reducing the modulation noise of said magnetic head; the {110} plane of at least one of said single crystal Mn-Zn ferrite is made substantially parallel to the plane forming the principal magnetic circuit; an angle θ of the direction of <100> existing inside said {110} plane with respect to the gap-forming plane is 5° to 40° or 85° to 120°; and glass having a contraction rate at the time when the temperature is reduced from the glass setting temperature down to room temperature is lower than the contraction rate of said ferrite is fuse-attached to the surfaces of said magnetic blocks of high permeability at least near the gap.

4,439,795

MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1981, Ser. No. 329,098
Claims priority, application Japan, Dec. 11, 1980, 55-174983
Int. Cl.³ G11B 5/74; H01F 1/02; B05D 5/12; B32B 7/02
U.S. Cl. 360—131 3 Claims

1. A magnetic recording medium having formed on a non-magnetic base at least two magnetic layers, each comprising ferromagnetic particles dispersed in a binder, wherein the ferromagnetic particles in the outermost magnetic layer have an average length of 0.3μ or less and a length to width ratio greater than 1/1 but not greater than 3/1, and the ferromagnetic particles in an underlying magnetic layer have a length to width ratio of more than 3/1.

4,439,796

MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1981, Ser. No. 329,099
Claims priority, application Japan, Dec. 11, 1980, 55-174981
Int. Cl.³ G11B 5/74; H01F 1/02; B05D 5/12; B32B 7/02
U.S. Cl. 360—131 5 Claims

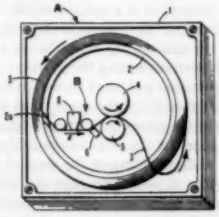
1. A magnetic recording medium having formed on a non-magnetic base at least two magnetic layers, each comprising ferromagnetic particles dispersed in a binder, wherein the ferromagnetic particles in the outermost magnetic layer are substantially cubic particles having a side length of 0.3μ or less, and the ferromagnetic particles in an underlying magnetic layer are acicular particles.

4,439,797

RECORDING TAPE FOR USE IN A RECORDING AND REPRODUCING APPARATUS

Tomohisa Yoshimaru; Mitsuo Yamashita, both of Yokohamashi, and Junichi Daigo, Nagareyamashi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1980, Ser. No. 188,099
Claims priority, application Japan, Sep. 29, 1979, 54-125478
Int. Cl.³ G11B 5/78, 23/14
U.S. Cl. 360—134 3 Claims



1. In a recording and reproducing system having a recording/playback head, a recording tape having a plurality of

parallel recording tracks extending lengthwise of said recording tape including a plurality of information tracks and at least one index track, said information tracks storing two-dimensional image information obtained by two-dimensional optical scanning, said index track storing index information including index codes and recording addresses which indicate the position of two-dimensional image information on said information tracks, said index information of the same content being stored a plurality of times on said index track, said index track extending lengthwise near the center of said recording tape and said recording/playback head moving transverse to the direction of movement of said recording tape to select one of said recording tracks.

4,439,798

REFERENCING DEVICE FOR DIGITAL DATA RECORDERS

Frank Chvojcsek, Chicago, Ill., assignor to Stenograph Corporation, Skokie, Ill.

Filed Sep. 14, 1981, Ser. No. 302,117
Int. Cl.³ G11B *5/00, 27/00;* B41J *3/26*
U.S. Cl. 360—4 **15 Claims**

1. In combination with a shorthand machine for generating electrical output signals corresponding to the keys depressed, and a recorder associated with said shorthand machine for making a data record of the signals generated thereby on a recording medium; an improved referencing means for identifying for future reference a portion of a data record as it is being recorded, said improvement comprising:

manually operable means and activating means, said activating means being electrically and mechanically separate from said manually operable means, said manually operable means being capable of selectively activating said activating means to generate a reference signal separate and independent from the output signal generated by said shorthand machine and for inputting said reference signal into said data recorder for making a record of said reference signal on said recording medium,

whereby a portion of the data record may be identified for future reference by said reference signal.

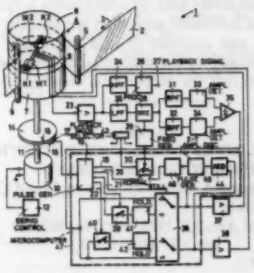
4,439,799

APPARATUS FOR REPRODUCING INFORMATION RECORDED IN A PLURALITY OF ADJACENT TRACKS

Peter Haubrich; Abraham Hoogendoorn, and Uwe Jahnke, all of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,873
Claims priority, application Austria, Mar. 25, 1981, 1398/81
Int. Cl.³ G11B *5/58, 21/04*
U.S. Cl. 360—77 **5 Claims**

1. An apparatus for reproducing information signals recorded on a record carrier in the form of a tape in inclined parallel tracks arranged adjacent each other, wherein together with said information signals tracking signals are recorded in said tracks, said tracking signals having a frequency which changes from track to track in a predetermined cyclic sequence, which apparatus comprises at least one rotatable playback head which, for following the tracks, is arranged on an electro-mechanical transducer, which head when scanning each track also reproduces tracking signals produced by cross talk from the two tracks adjacent the track being scanned, a position detector for detecting the rotary position of the head relative to the record carrier, which position detector supplies a position pulse and is connected to a pulse generator for generating control pulses associated with the position pulses, which control pulses are applied to a signal generator whose frequency is variable, which signal generator, depending on said control pulses, consecutively generators track selection signals whose frequency changes in the same cyclic sequence as the recorded tracking signals, a signal processing circuit which derives an actuating signal from said track selection signals and the reproduced crosstalk tracking signals, by means



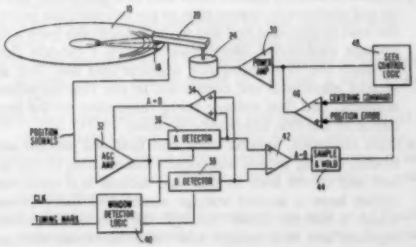
of which actuating signal the transducer carrying the playback head is adjustable between two extreme positions substantially transversely of the tracks, characterized in that there is provided at least one amplitude discriminator, means for supplying to said amplitude discriminator a signal which is proportional to the actuating signal for the transducer, said discriminator having two threshold values corresponding to the two amplitudes of the actuating signal which deflect the transducer to its two extreme positions, which discriminator supplies a switching signal when a threshold value is exceeded, which switching signal controls a further pulse generator which, depending on said switching signal, supplies pulses to said signal generator causing an additional change-over in the track selection signal generation.

4,439,800

SERVO CONTROL OF SEEK OPERATION IN MAGNETIC DISK DRIVE

Steven H. Powell, Ogden, Utah, assignor to Iomega Corporation, Ogden, Utah

Filed Apr. 24, 1981, Ser. No. 257,484
Int. Cl.³ G11B *21/08*
U.S. Cl. 360—78 **15 Claims**



9. Control apparatus for controlling the motion of a movable

member in response to a motion command, said control apparatus comprising means for selecting one of a plurality of operational modes in response to determination of the amount of distance to be traveled, said operational modes comprising:

a first operational mode, selected when said motion is relatively short, in which the entire series of commands required is selected from memory means and supplied to controller means;

a second operational mode, selected when said motion is of intermediate length, in which portions of stored acceleration and deceleration command sequences are selected from memory means and supplied to said controller means, in which additional steady velocity commands may be inserted to insure the correct total distance is traveled; and

a third operational mode selected when said motion commanded is relatively long, in which entire acceleration and deceleration command sequences are selected from memory means and supplied to said controller means and additional steady velocity commands are inserted in the sequences so that the proper total distance is traveled.

4,439,801

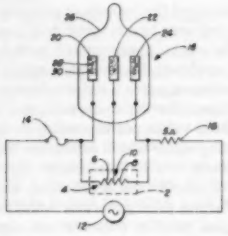
ELECTRICAL LOAD IMBALANCE DETECTION AND PROTECTION APPARATUS

John Fajt, Wynnewood, Okla., assignor to Xenell Corporation, Wynnewood, Okla.

Filed Apr. 12, 1982, Ser. No. 367,549

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—55 **22 Claims**



1. An apparatus for providing a short-circuit in electrically parallel connection with a load, the load having a first impedance segment defined between a first end of the load and an intermediate point of the load and further having a second impedance segment defined between a second end of the load and the intermediate point, when the load is connected to an energy source and has a sufficient impedance change in either the first impedance segment or the second impedance segment, said apparatus comprising:

a first electrode having an end electrically connectible to the first end of the load;

a second electrode, spaced from said first electrode, having an end electrically connectible to the intermediate point of the load so that said first and second electrodes have a first voltage established therebetween when a current flows through the first impedance segment and said first and second electrodes are connected to the first impedance segment, said first voltage being responsive to the impedance of the first impedance segment;

a third electrode, spaced from said first and second electrodes, having an end electrically connectible to the second end of the load so that said second and third electrodes have a second voltage established therebetween when a current flows through the second impedance segment and said second and third electrodes are connected to the second impedance segment, said second voltage being responsive to the impedance of the second impedance segment;

a housing having a hollow interior in which said first, second and third electrodes are disposed; and

wherein a current flows between said first and third electrodes when either said first voltage or said second voltage exceeds a predetermined value.

4,439,802

OVERVOLTAGE GUARD FOR ELECTRONIC CIRCUITS

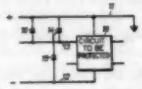
Jan H. Johansson, Bålsta, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

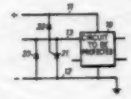
Filed Aug. 14, 1981, Ser. No. 292,900

Claims priority, application Sweden, Sep. 26, 1980, 8006773

Int. Cl.³ H02H *7/20, 3/20*

U.S. Cl. 361—56 **6 Claims**





1. In a circuit which is supplied by a current source having positive and negative terminals wherein one of said terminals is grounded and the other of said terminals is ungrounded, and having a signal point, overvoltage prevention apparatus for preventing the signal point in response to a transient voltage from attaining a voltage having an absolute value which significantly exceeds the absolute value of the voltage of the ungrounded terminal wih respect to ground comprising a triggerable electronic current switch means for interconnecting the signal point and ground and having a trigger input, and unidirectional conducting means for connecting the trigger input of said triggerable electronic current switch means and the ungrounded terminal of said current source, said unidirectional conducting means being biased to conduct when the voltage of said signal point begins to exceed in the same polarity the voltage of the ungrounded terminal of said current source whereby said triggerable electronic current switch means is triggered to conduction thereby limiting the amount of the voltage by which said signal point exceeds the voltage of the ungrounded terminal.

4,439,803

POWER INTERRUPTION DEVICE

Sadaaki Baba, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,622

Claims priority, application Japan, Dec. 5, 1980, 55-174562[U]

Int. Cl.³ H02H *7/26*

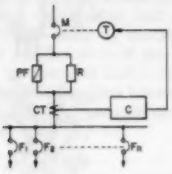
U.S. Cl. 361—63 **3 Claims**

1. A power interrupting device of the type having a main interrupter connected in series between a power source and at least one branch interrupter, and a current limiting circuit connected in series between said main interrupter and at least one branch interrupter for limiting the maximum value of current flowing through said main interupter to substantially a predetermined current value, each of said main and branch interrupters having respective maximum time limits for which they will conduct a particular current before interrupting said current, the time limit of said main interrupter being greater than that of said at least one branch interrupter, and said cur-

rent limiting circuit having a maximum allowable time for which it can conduct a particular current, the improvement comprising:

operating means for operating said main interrupter in response to a control signal to cause said main interrupter to interrupt current flowing therethrough; and

sensing means for sensing the current flowing through said main interrupter, said sensing means comprising a current transformer coupled in series between said current limiting circuit and said at least one branch interrupter and a



current sensing relay for sensing the current through said current transformer, and said sensing means providing said control signal after a maximum time limit of sensed current at said particular current level, the time limit of said sensing means being between that of said main interrupter and at least one branch interrupter for any current value up to said predetermined current value and less than said maximum allowable time limit of said current limiting circuit for any current up to said predetermined current value.

4,439,804

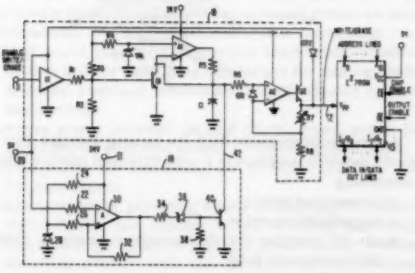
PROTECTION CIRCUIT FOR MEMORY PROGRAMMING SYSTEM

Michael H. Riddle, Cherry Hill, and John R. Orr, Pennsauken, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,810

Int. Cl.³ H02H *7/09*

U.S. Cl. 361—92 **7 Claims**



1. A protection circuit for an apparatus for generating a high level, controlled risetime, write-erase signal to an electrically erasable programmable read-only memory (E^2PROM), said signal generating apparatus including means for coupling first and second power supplies thereto, said first and second supplies providing, when operational, first and second potentials, respectively, where said second potential is substantially greater than said first potential, said signal generating apparatus responsive to one voltage level at the input thereof for generating said high level signal and responsive to a different voltage level for providing no output therefrom, said protection circuit inhibiting the generation of said high level signal whenever the potential provided from said first supply drops below the level of a third potential, less than said first potential, while said second supply is operational, said protection circuit comprising:

means coupled to said second supply for providing said third potential;

means coupled between said second supply and reference ground for comparing the voltage level of said first supply with said third potential, said comparing means generating a control signal when the voltage level of said first supply is less than said third potential; and

means responsive to said control signal and coupled to said signal generating apparatus for inhibiting the generation of said high level signal.

4,439,805

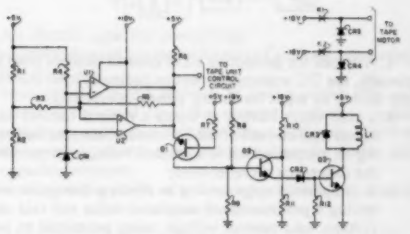
LOW VOLTAGE PROTECTION CIRCUIT

George K. Tarleton, Itasca, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed May 21, 1982, Ser. No. 380,484

Int. Cl.³ H02H *3/24*

U.S. Cl. 361—92 **12 Claims**



1. A low voltage protection circuit for use with a magnetic tape unit, including a control circuit, a tape motor and first and second power sources, said protection circuit comprising:

voltage monitoring means connected to said first power source, operated in response to said first power source having a voltage above a pre-determined level to provide a voltage detected signal;

said voltage monitoring means is further operated in response to said first power source having a voltage above said pre-determined level to enable said control circuit;

said voltage monitoring means further operated in response to said first power source having a voltage below said pre-determined level to provide a voltage failure signal;

an isolation transistor having base, collector and emitter leads, said base lead connected to said first power source, and said emitter lead connected to said voltage monitoring means, said isolation transistor operated in response to said voltage detected signal to provide a relay driving circuit enable signal, and further operated in response to said voltage failure signal to provide a relay driving circuit disable signal;

a relay driving circuit connected to said collector lead;

a relay connected to said relay driving circuit;

said relay driving circuit operated in response to said relay driving circuit enable signal to provide a relay enable signal;

said relay operated in response to said relay enable signal to connect said second power source to said tape motor;

said relay driving circuit further operated in response to said relay driving circuit disable signal to provide a relay disable signal;

said relay further operated in response to said relay disable signal to disconnect said second power source from said tape motor; and

said voltage monitoring means is further operated in response to said first power source having a voltage below said pre-determined level to disable said control circuit.

4,439,806

SHORT-CIRCUIT PROTECTION DEVICE FOR A DC CONTROL ELEMENT

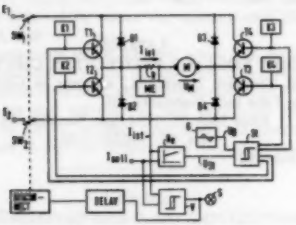
Antonio Brajder, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 354,929

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109482

Int. Cl.³ H02H *3/08, 7/20, 7/10*

U.S. Cl. 361—98 **3 Claims**



1. A circuit for protecting a DC control element from short-circuits, the DC control element including at least one transistor having an input for timing pulses, comprising:

a. a controlllor having as inputs a desired current and the actual load current of the DC control element and providing an output which is a control voltage proportional to the difference therebetween;

b. a comparison stage having as inputs a triangular voltage having a predetermined maximum value and said control voltage, said control voltage being permitted to assume values greater than said predetermined maximum value, said comparison stage providing timing outputs existing for a duration corresponding to the duration over which said triangular voltage exceeds said control voltage, said timing pulses being provided to the inputs of each transistor in said DC control element; and

c. an overload protection device for each transistor, each overload protection device coupled to the respective transistor and having timing pulses from said comparison stage as an input, each overload protection device responsive to an overcurrent in the transistor to block the transistor and keep it blocked until the start of a new timing pulse, whereby in the case of an overload, said control voltage will exceed said maximum value of said triangular voltage thereby assuring that no pulses are generated until the overload condition is removed thereby avoiding repeated switching on and off of said overload protection devices.

4,439,807

SECONDARY ARRESTER

Roderick Reitz, Berkshire, Mass., assignor to General Electric Company

Filed Aug. 18, 1982, Ser. No. 409,238

Int. Cl.³ H02H *3/22*

U.S. Cl. 361—127 **7 Claims**

1. A voltage surge arrester comprising, in combination:

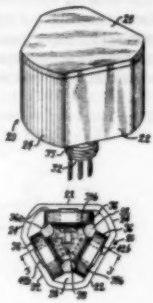
A. a triangular shaped, insulative housing having three integrally interconnected sidewalls defining a compartment;

B. means for establishing an edgewise varistor mounting position in said compartment along each said sidewall;

C. a metal oxide varistor disposed in at least one of said mounting positions, said varistor having a disk-shaped body with electrodes applied to opposed faces thereof;

D. an electrically conductive spring clip centrally located within said compartment, said spring clip having a body portion with three angularly spaced contact fingers outstanding therefrom, said contact fingers being resiliently biased toward said mounting positions for electrically contacting engagement with the inwardly faced electrodes of any varistors disposed therein;

E. separate contact strips located between said planar sidewalls and those of said mounting positions occupied by a



varistor for electrically contacting engagement with the outwardly faced electrodes thereof; and

F. separate leads admitted into said housing and electrically connected to said spring clip and to each of said contact strips.

4,439,808

ELECTROMAGNETIC LOCK

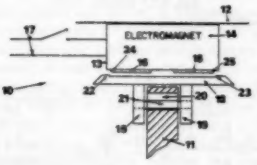
Peter J. Gillham, Frittenden, England, assignor to BSG (Security) Limited, London, England

Filed Jul. 28, 1981, Ser. No. 287,657

Claims priority, application United Kingdom, Jul. 28, 1980, 8024626; Jul. 28, 1980, 8024627

Int. Cl.³ H01H *47/00*

U.S. Cl. 361—144 **9 Claims**



1. An electromagnetic lock for locking together two relatively movable members in a predetermined relative position, comprising:

electromagnet means,

a magnetisable member,

means to energise the electromagnet means to cause an electromagnetic field,

magnetic flux cancelling means for cancelling the magnetic flux in the electromagnet means when the electromagnet means is switched off, said flux cancelling means including a circuit including charge storage means connected so that, when the electromagnet is switched off, the electromagnet discharges through itself and then charge from the charge storage means is applied to the electromagnet means to neutralise the residual magnetic flux, and

mounting means for mounting the electromagnet means and magnetisable member each to a respective one of two relatively movable members in such a position that, as the relatively movable members move to the predetermined position, the magnetisable member and the electromagnet means move towards one another generally transversely of the axis of the electromagnetic field, whereby, when

the two relatively movable members are in said predetermined position, said movable magnetisable member may move towards said electromagnet means generally along the axis of the electromagnetic field under the action of the electromagnetic field to normally hold said two relatively movable members in said predetermined relative position,

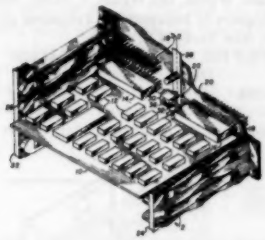
shoulder means being provided on or connected with said magnetisable member and said electromagnet means whereby when said relatively movable members are in said predetermined position and said movable magnetisable member and electromagnet means are moved relatively axially towards one another said shoulders may engage to retain the two relatively movable members in said predetermined position even if the two relatively movable members are forced in such a manner to overcome the electromagnetic attraction between said magnetisable member and said electromagnet means.

4,439,809

ELECTROSTATIC DISCHARGE PROTECTION SYSTEM

Merle E. Weight, Coon Rapids, and Theodore S. Swenson, Isanti, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 22, 1982, Ser. No. 351,089
Int. Cl.³ H05F *3/02*
U.S. Cl. 361—220 **7 Claims**



1. For use with an assembly for electrostatic sensitive devices having signal circuits, power circuits and ground circuits, an electrostatic discharge protection system comprising:

circuit board means for supporting electrostatic sensitive devices and for supporting conductors for making predetermined electrical interconnection of selected ones of said devices;

juncture means mounted on said circuit board means for providing an electrical common interconnection point;

circuit means for connecting all ground circuits to said juncture means;

contact means for providing a path of discharge of electrostatic charge, said contact means including electrically conductive spring means having a first portion for making electrical contact with said juncture means, a second portion, and a third portion for interconnecting said first and second portions;

centering means for centering said circuit board means and arranged for supporting said contact means and

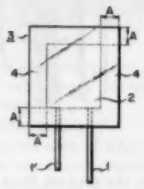
electrostatic charge dissipation means arranged for making contact with said contact means prior to any signal circuits being brought into contact for causing discharge of said electrostatic charge without causing damage to any of the signal circuits in the electrostatic sensitive devices, said electrostatic discharge dissipation means including electrically conductive guide pin means for cooperating with said centering means for making electrical contact with said second portion of said electrically conductive spring means as said guide pin means is moved into cooperative relationship to said centering means.

4,439,810

ELECTRIC CAPACITOR WITH ENCLOSURE STRUCTURE CONSISTING OF PLASTIC LAMINATED FILM

Hiroshi Shimada, and Kiyoshi Sakamoto, both of Nagai, Japan, assignors to Marcon Electronics Co., Ltd., Nagai, Japan

Filed Aug. 17, 1982, Ser. No. 408,875
Claims priority, application Japan, Sep. 10, 1981, 56-135333[U]; Sep. 10, 1981, 56-135334[U]
Int. Cl.³ H01G *1/06*; B65D *73/02*
U.S. Cl. 361—272 **5 Claims**



1. An electric capacitor comprising:

a capacitor element having a plurality of external connecting terminals; and

a laminated film which includes at least a plastic film and which covers said capacitor element to form a sealed portion around said capacitor element, said sealed portion being sealed to form an enclosure structure for sealing said capacitor element;

wherein a sealing width of said sealed portion is 1 to 20 mm.

4,439,811

CAPACITOR

Tohru Sasaki; Mutsuru Ohta; Syuuzi Terasaki, and Shozo Kakizaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 315,750, Oct. 28, 1981, abandoned. This application Nov. 26, 1982, Ser. No. 444,746
Claims priority, application Japan, Oct. 31, 1980, 55-154140
Int. Cl.³ H01G *3/17, 4/06*
U.S. Cl. 361—313 **8 Claims**

1. A capacitor in which an at least uniaxially stretch-oriented film comprises:

(a) a dielectric layer comprising from 95 to 100% by weight of a vinylidene fluoride resin; and

(b) a coating layer comprising a mixture of a vinylidene fluoride resin and a polymer substantially incompatible with the vinylidene fluoride resin and having a critical surface tension of 30 dyn/cm or higher, the dielectric layer and the coating layer being coextruded with the coating layer being disposed at at least one side of the dielectric layer.

4,439,812

IMPREGNATED CAPACITOR FOIL

Thomas G. Chapman, Hudson Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,043
Int. Cl.³ H01G *3/04*; B32B *3/28*
U.S. Cl. 361—314 **4 Claims**

1. In an electrical capacitor including a casing with electrical terminals thereon and one or more capacitor rolls in said casing and connected to the terminals and a dielectric fluid in the casing and impregnating the roll, the combination of

(a) said roll comprising a pair of spaced line embossed metallic electrode foil strips and a dielectric therebetween consisting solely of a synthetic resin material and comprising at least one synthetic resin strip,

(b) said electrode foil strips having closely spaced parallel

flutes on the surface thereof running laterally across the strips to their edges and covering the length of the useful foil surface to provide a compressible thickness electrode,

(c) said flutes providing a foil thickness measured vertically from a plane through the work hardened crowns of the flutes to a plane through the base edges of the flutes of less

than about 3 times the original thickness of the foil between winding in said roll,

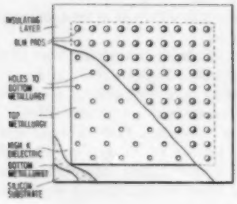
(d) said flutes being formed and spaced apart in a manner whereby there is a smooth essentially continuously curving foil surface leading from one flute to an adjacent flute so that a point on the base of one flute and a point on the base of an adjacent flute are essentially coplanar.

4,439,813

THIN FILM DISCRETE DECOUPLING CAPACITOR

William E. Dougherty; Irving Feinberg, both of Poughkeepsie; James N. Humenik, and Alan Platt, both of Lagrangeville, all of N.Y., assignors to IBM Corporation, Hopewell Junction, N.Y.

Filed Jul. 21, 1981, Ser. No. 285,650
Int. Cl.³ H01G *4/10, 1/14*
U.S. Cl. 361—321 **13 Claims**



1. A chip capacitor comprising:

a bottom conductive layer having sequentially coated thereon

a dielectric layer,

a top conductive layer, and

an insulating layer; first and second via holes, wherein:

said first via holes extend through said insulating layer to expose said top conductive layer, and

said second via holes extend through said insulating, top conductive, and dielectric layers to expose said bottom conductive layer with said insulating layer extending about the side walls of said top conductor layer in said second via holes to insulate said top conductive layer; and

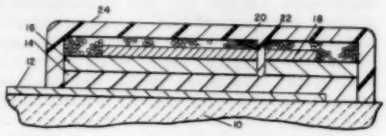
isolated solder mounds selectively deposited on said insulating layer over and in via holes in electric contact with an exposed conductive layer therein.

4,439,814

LASER ADJUSTABLE CAPACITOR AND FABRICATION PROCESS

Junior I. Rhodes, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 12, 1982, Ser. No. 407,544
Int. Cl.³ H01G *4/10, 10/00, 7/00*
U.S. Cl. 361—321 **32 Claims**



29. A capacitor, comprising:

a substrate;

a bottom conductor formed on said substrate;

a dielectric formed on said bottom conductor;

a top conductor formed on said dielectric; and

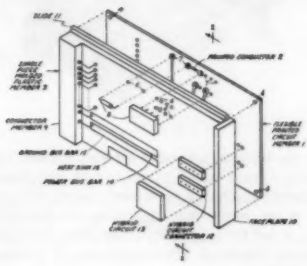
a layer of green dam glass formed over said top conductor.

4,439,815

PRINTED CIRCUIT ASSEMBLY FOR A CARD FILE PACKAGING SYSTEM

Anthony D. Close, Wilton, and Walter A. Menn, Stamford, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,426
Int. Cl.³ H05K *1/14*
U.S. Cl. 361—386 **23 Claims**



1. A printed circuit assembly for a card file packaging system comprising:

a flat flexible dielectric member having thereon printed conductors of a printed circuit; and

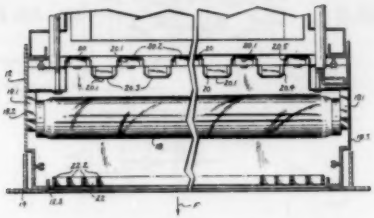
a single piece rigid molded dielectric member having a first relatively large flat surface against which said flexible member bears and to which said flexible member is secured for support, said molded member having molded therein at least holes to support leads of electrical components of said assembly disposed adjacent a second relatively large flat surface parallel to and spaced from said first surface, said holes enabling said leads to extend therethrough from said second surface to said first surface to enable connection of said leads to said printed conductors, said molded member having parallel slides molded therein along and extending from parallel edges thereof for tracks of said card file system and electrical connectors molded therein along a first edge thereof perpendicular to said parallel edges and adjacent said second surface, said electrical conductors extending outwardly from said first edge parallel to said second surface to connect said assembly to at least said card file system.

4,439,816

LIGHTING AND AIR FILTER STRUCTURE

Philip F. Litchfield, Edina, Minn., assignor to Sci-Med Environmental Systems, Inc., Eden Prairie, Minn.

Filed Dec. 10, 1981, Ser. No. 329,185
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—96 13 Claims



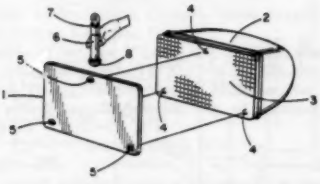
1. A lighting and air filter structure comprising a housing having air inlet and outlet ports defining upstream and downstream sides of the housing, an air filter disposed in the housing for filtering air passing therethrough, lighting means comprising a plurality of lights carried by the housing downstream of and spaced from the filter means, and reflector means comprising a plurality of parallel, elongated reflector plates carried by the housing and oriented generally normal to the direction of air flow and between the air filter and the lights, adjacent reflector plates being spaced from one another in the direction of air flow and having adjacent edges substantially aligned in the direction of air flow to permit air issuing from the filter to pass between the reflector plates without significant pressure drop, the reflector plates having reflective, downstream-facing surfaces to reflect light emitted by the lighting means away from the air filter.

4,439,817

STICK-ON FOG LIGHT LENS FOR HEADLIGHT

Ronald L. Aton, 202 Spencer Rd., New Lenox, Ill. 60451

Filed Jul. 17, 1981, Ser. No. 284,167
Int. Cl.³ F21M *3/14*
U.S. Cl. 362—255 5 Claims



1. A combination fog lens and headlight, wherein said headlight includes a glass lens, said fog lens comprises a thin sheet of soft flexible transparent plastic material having a peripheral configuration corresponding to that of said glass lens of said headlight, said thin sheet of plastic material having a contact surface for adhering to said glass lens of said headlight throughout their mutually facing area, said contact surface being moistened throughout with water to bond said thin sheet of plastic material to said glass lens of said headlight, said glass lens including at least one projection extending outwardly therefrom, said fog lens including a corresponding aperture to receive said projection therethrough when said plastic sheet is placed on said glass lens.

4,439,818

FLEXIBLE LIGHT DISPLAY WITH EVENLY DISTRIBUTED ILLUMINATION

Joseph J. Scheib, 4453 Pali Way, Boulder, Colo. 80301

Filed Feb. 25, 1983, Ser. No. 469,705
Int. Cl.³ F21V *21/14*
U.S. Cl. 362—250 15 Claims

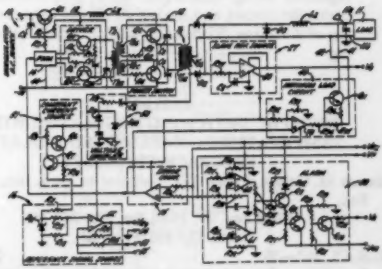
1. A lighting strip, comprising:
power means for providing a low voltage power source of less than 110 volts;
a plurality of lighting means;
a plurality of resistors each of which is connected in series with a different one of said plurality of lighting means;
electrical means connecting each of said series connected lighting means and resistance means with said power means; and
carrier means for having said plurality of lighting means mounted thereon for allowing said plurality of lighting means to be configured in a predetermined manner.

4,439,819

SWITCHING REGULATOR WITH CONTROLLED SIMULATED LOAD

John F. Regan, Lombard, Ill., assignor to Rockwell International, Downers Grove, Ill.

Division of Ser. No. 869,514, Jan. 16, 1978, Pat. No. 4,359,679.
This application Aug. 9, 1982, Ser. No. 406,139
Int. Cl.³ H02P *13/16*
U.S. Cl. 363—17 3 Claims

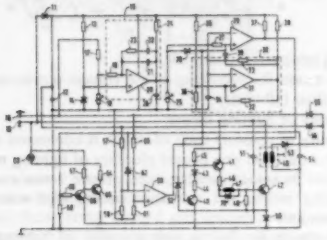


1. In a switching regulator, the improvement comprising:
means for applying a simulated load across the output terminals of the regulator;
control means responsive to the output of said regulator for connecting and disconnecting said load simulating means across said output terminals in response to the level of the regulator output;
a first comparator for producing an error control signal in response to a differential between a reference signal representing a selected output and a feedback signal representing the actual output of the regulator, and said control means being responsive to said error control signal; and a second comparator, included in said control means, for receiving the output of said first comparator and producing a control signal for said load simulating means when the regulator output reaches a predetermined level.

4,439,820
PWM, SINGLE-ENDED, SEPARATELY DRIVEN D.C.-D.C. CONVERTER

Willi Kühn, Markgröningen, and Eberhard Mausner, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 343,405
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109612
Int. Cl.³ H02P 13/22
U.S. Cl. 363—21 13 Claims



1. Regulated d.c. voltage converter comprising a voltage conversion transformer followed by a rectifier, means for supplying, from d.c. input energy, an alternatingly switched voltage wave to said transformer, and a voltage regulator, to which a reference voltage as well as the rectified voltage output of said transformer are supplied for comparison in said regulator, being connected for modifying said alternately switched voltage wave, and further comprising:

a sawtooth vave generator (30) and a first comparator (29) provided in said alternatingly switched voltage wave supplying means, said first comparator having its output connected for supplying pulses for controlling the input wave for said transformer and having its inputs respectively connected to the output of said sawtooth wave generator and to the output of said regulator (15), said regulator being constituted as a proportional-integral controller circuit and having its output connected to the tap of a voltage divider (24, 25) for output voltage limiting.

4,439,821
DC TO DC SWITCHING REGULATOR WITH TEMPERATURE COMPENSATED ISOLATED FEEDBACK CIRCUITRY

James M. Grippe, Plano, Tex., assignor to Varo, Inc., Garland, Tex.

Filed Jan. 29, 1982, Ser. No. 343,744
Int. Cl.³ H02P 13/22
U.S. Cl. 363—26 26 Claims

1. A DC to DC switching regulator for an unregulated DC signal comprising:

first means for converting the unregulated DC signal into a first variable pulse width signal,

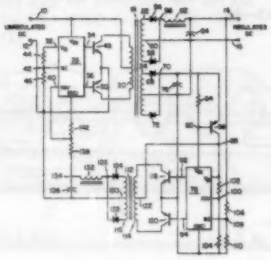
first isolation means for receiving and converting said first variable pulse width signal into an output DC signal, said output DC signal isolated from the unregulated DC signal;

second means for converting said isolated output DC signal into a second variable pulse width signal said second variable pulse signal having constant amplitude pulses with a variable width, the amplitude thereof independent of said isolated output DC signal;

second isolation means for receiving said second variable pulse width signal and generating an isolated pulse signal, said isolated pulse signal having variable width pulses corresponding to the pulse width of said variable pulse width signal and a constant amplitude; and

means for converting said isolated pulse signal into an error signal, said error signal isolated from said DC output signal;

said error signal and the level of the unregulated DC signal determining the level of said output DC signal and the

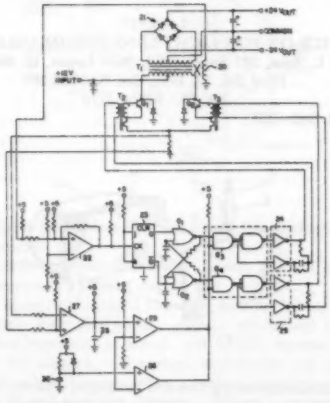


level of said output DC signal determining the level of said error signal, such that said error signal provides an isolated feedback signal that is 180 degrees out of phase to regulate said output DC signal.

4,439,822
METHOD AND APPARATUS FOR DETECTING AND PREVENTING IMPENDING MAGNETIC SATURATION IN MAGNETIC MATERIALS

Alan G. Cocconi, Pasadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Mar. 26, 1982, Ser. No. 362,293
Int. Cl.³ H02H 7/122
U.S. Cl. 363—56 6 Claims



1. A method of detecting an impending saturation in nonlinear magnetic material for particular operating conditions in response to a varying magnetic field in a principal direction induced by a drive current through a coil around said material, said coil having its axis aligned in said principal direction, comprising the step of monitoring the rate of change of flux density of a magnetic field orthogonal to said varying magnetic field to produce a voltage proportional thereto, and the step of comparing said voltage with a predetermined threshold voltage characteristic of impending saturation of said material in said operating conditions.

4,439,823

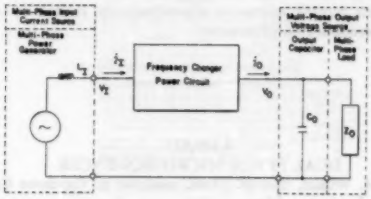
CONVERTING MULTIPHASE POWER FROM ONE FREQUENCY TO ANOTHER USING CURRENT WAVEFORMS

Laszlo Gyugyi, Penn Hills; Geoffrey M. Smith, Wilkinsburg, and Eric J. Stacey, Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 11, 1982, Ser. No. 338,777

Int. Cl.³ H02M 5/257

U.S. Cl. 363—161 21 Claims



1. Apparatus for generating a multiphase output waveform of a desired frequency from a multiphase input waveform of another frequency, said apparatus comprising:

a multiphase AC source for generating said multiphase input waveform, said source having an impedance which is predominatly inductive;

a plurality of output lines;

an array of bidirectional switches connected directly between each phase of the AC source and each output line;

control means for sequentially turning on and off said bidirectional switches associated with each output line in a repetitive pattern such that each phase of the AC source conducts current to only one of said output lines at a time with segments of the current from each phase of the AC source being sequentially applied to the output lines, such that each phase of the AC source conducts current through at least one of said bidirectional switches at all times, to generate thereon the output waveform having a fundamental component of said desired frequency; and

load means connected across the output lines having an impedance which is sbustantially noninductive.

4,439,824

DEVICE HAVING ONE OR MORE MANUALLY CONTROLLED FUNCTIONS

Ferdy Mayer, 18 Rue Thiers, Grenoble 38000, France, assignor to Ferdy Mayer, Grenoble, France

Continuation of Ser. No. 571,457, Apr. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 312,528, Dec. 6, 1972, abandoned. This application Nov. 21, 1980, Ser. No. 209,122

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1971, 2160453

Int. Cl.³ G06G 7/70

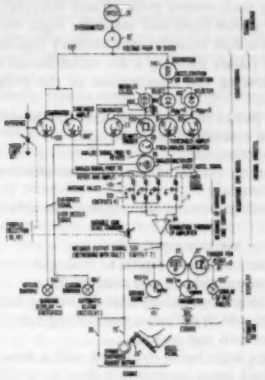
U.S. Cl. 364—150 23 Claims

1. In a motor vehicle having a plurality of manually controlled functions which affect variables in the operation of the motor vehicle in which a human operator forms a part of a feedback loop that controls a variable by observing the operation of said motor vehicle with respect to the actual value of said variable, by comparing said actual value with a desired value, and by controlling the corresponding manually controlled function, the improvement of an additional feedback loop comprising:

sensor means on said motor vehicle for generating a signal proportional to said variable;

computer means connected to said sensor means for processing said signal according to predetermined algorithms to define a dynamic driver image (D.D.I.), said computer means comprising,

means for modifying said D.D.I. in relation to an ideal driver's image (I.D.I.) to produce a control output based at least partially on the modified D.D.I.;



control means responsive to said control output for modifying the responsiveness of said corresponding manually controlled function to operation by said human operator.

4,439,825

POSITION REGULATION SYSTEM CONTAINING A DIGITAL INCREMENTAL MEASURING APPARATUS

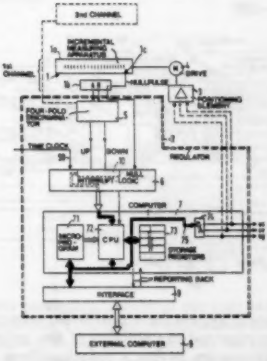
Meinrad Donner, Nuolen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zürich, Switzerland

Filed Jul. 27, 1981, Ser. No. 286,777

Claims priority, application Switzerland, Aug. 17, 1980, 6201/80

Int. Cl.³ G05B 19/21

U.S. Cl. 364—167 4 Claims



1. A position regulation system for two relatively movable objects, one of which is provided with a drive, comprising:

a digital incremental measuring apparatus for evaluation of measuring signals of 90°-phase shift;

said digital incremental measuring apparatus containing a direction discriminator having an output;

said discriminator delivering a number of measuring pulses for each relative direction of movement of said two objects;

each of said measuring pulses corresponding to one edge of the measuring signals;

an interrupt logic for delivering output pulses;

the output of said discriminator being connected to said interrupt logic;

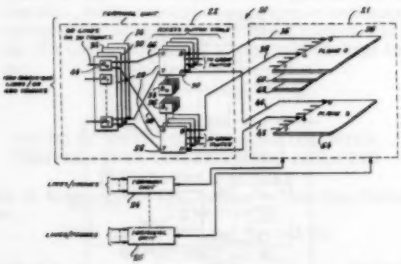
a computer having a program and memory register means;
said interrupt logic being connected to said computer;
the course of the program of said computer being interrupted by each output pulse of said interrupt logic;
said output pulses from said interrupt logic serving for updating an actual value in said memory register means;
said output pulses forming a set value/actual value difference following the interruption of the program of the computer;
said output pulses forming from said set value/actual value difference a positioning magnitude;
a positioning element;
said positioning magnitude being transmitted to said positioning element;
said positioning element controlling the drive of the one object;
the computer has an output side;
said computer contains a digital to analogue converter defining said output side of said computer;
said digital to analogue converter delivering said positioning magnitude which defines a positioning magnitude for the position of said one object;
said interrupt logic being provided with a time clock input;
said time clock input interrupting the course of the program in said computer;
the measuring pulses arriving at said interrupt logic between said interruptions being a measurement for the displacement speed of the driven object; and
a signal representative of the displacement speed of said object being transmitted to the digital to analogue converter as a second positioning magnitude.

4,439,826

DIAGNOSTIC SYSTEM FOR A DISTRIBUTED CONTROL SWITCHING NETWORK

Alan J. Lawrence, Shelton, and Daniel C. Upp, Easton, both of Conn., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,866
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **18 Claims**



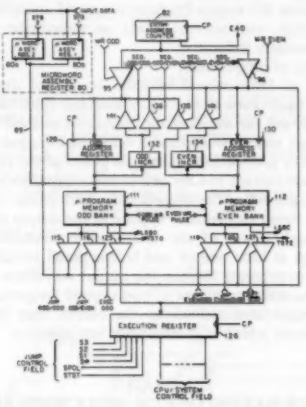
1. A diagnostic system for a distributed control switching network interconnected to a plurality of data processors, each of the data processors having a unique address and having diagnostic data stored therein for use in performing diagnostics in a designated portion of the switching network, comprising:
a plurality of digital switching elements within said designated portion of the switching network, each of said digital switching elements including a plurality of bidirectional ports for receiving and transmitting digital signals, and each of said bidirectional ports having a unique address in the network algorithmically related to the unique addresses of designated data processors;
means for providing bidirectional communication paths from each of said data processors to said algorthimically related addressed digital switching elements within the designated portions of the switching network addressable by said designated data processors;
means associated with said processors for providing diagnostic paths over said bidirectional communication paths between said digital switching elements and said data processors so that each of said data processors is interconnected to another data processor by connection paths equal in number to the number of bidirectional communication path originating from said data processor so that the addresses of said data processors are algorithmically related to the addresses of said bidirectional ports connected thereto by said diagnostic paths, such that the interconnected data processors perform diagnostics over the portion of the switching network that includes the ports having addresses algorithmically related to said interconnected processors.

4,439,827

DUAL FETCH MICROSEQUENCER

Dean M. Wilkes, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 28, 1981, Ser. No. 335,026
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—200 **11 Claims**

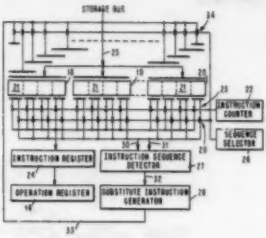


10. A dual fetch instruction sequencer having transparent overlay capability, comprising:
a first address register coupled to a first memory for addressing instructions therein; a second address register coupled to a second memory for addressing instructions therein; said
first and second memories for storing instructions from a homogeneous microprogram having conditional branch instructions wherein the next possible instructions of each conditional branch instruction are stored in opposite ones of said first and second memories wherein both of the next possible instructions can be simultaneously fetched, one from each memory via said first and second address registers respectively;
an execution register coupled to the outputs of said first and second memories for receiving instruction fields from either one of said first or second memories for homogeneously executing said microprogram;
means for determining a microcycle corresponding to when an instruction is being fetched from only said first memory leaving said second memory available for rewriting; and
means responsive to said determining means for writing a new instruction into said second memory during said microcycle.

4,439,828
INSTRUCTION SUBSTITUTION MECHANISM IN AN INSTRUCTION HANDLING UNIT OF A DATA PROCESSING SYSTEM

Daniel B. Martin, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 27, 1981, Ser. No. 287,342
Int. Cl.³ G06F 9/16
U.S. Cl. 364—200 **6 Claims**



1. An instruction handling unit in a data processing system including a central processor instruction buffer for storing a plurality of program instructions, an execution unit for receiving instructions in sequence from the instruction handling unit for execution by the execution unit, and an addressable main storage system for storing data and instructions, the improvement comprising:

instruction sequence detector means, connected to the instruction buffer, including examining means for fields of each of n sequential instructions in the instruction buffer;

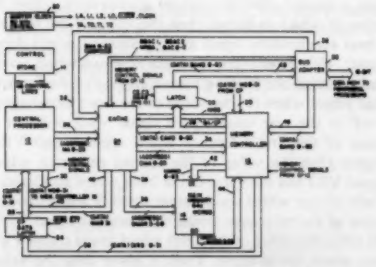
signalling means, connected and responsive to said examining means, for providing an output signal indicating a sequence of predetermined instructions in said n sequential instructions; and

substitute instruction generator means, connected and responsive to said output signal of said signalling means for effecting transfer of a substitute instruction to the execution unit in place of said sequence of n predetermined instructions.

4,439,829
DATA PROCESSING MACHINE WITH IMPROVED CACHE MEMORY MANAGEMENT

Horace H. Tsiang, North Andover, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 223,154, Jan. 7, 1981, abandoned. This application Oct. 17, 1983, Ser. No. 542,556
Int. Cl.³ G06F 13/00
U.S. Cl. 364—200 **6 Claims**



1. In a data processing machine including main memory means for storing data, including instructions for directing operations of the machine, and processor means for processing data, cache memory means, comprising:

cache means, including

means for storing a copy of a portion of the data stored in the main memory means,

cache control means for receiving read and write requests from the processor means and for providing addresses corresponding to certain requests to a memory controller means,

cache tansfer means responsive to operation of the cache control means for conducting data from the memory controller means to the cache storing means and for conducting data from the cache storing means to the processor means, and

the memory contoller means, including

controller control means responsive to the addresses for providing outputs for controlling operation of the controller means and the cache and main memory means, and

controller transfer means for conducting read data from the main memory means to the cache storing means and for conducting write data directly from the processor means to the main memory means,

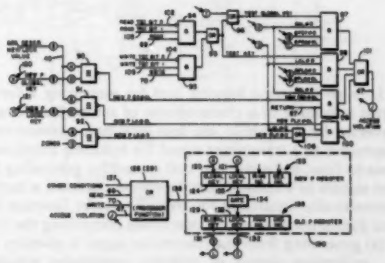
the controller control means including timing means defining a cache memory means operating cycle comprising a first subcycle and a second subcycle, and

the cache and controller control means responsive to the timing means for accepting only processor read requests during first subcycles and for accepting and resolving conflicts between all other cache and memory operation requests during second subcycles.

4,439,830
COMPUTER SYSTEM KEY AND LOCK PROTECTION MECHANISM

Richard J. Chueh, Saratoga, Calif., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 9, 1981, Ser. No. 319,338
Int. Cl.³ G06F 7/02
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system of the type including: (a) a memory comprising a plurality of addressable cells and a data port, said cells grouped into a plurality of segments, each segment having a unique number forming a portion of the addresses of the cells in the segment, said memory accessed by externally supplied address signals each encoding the address of the cell to be referenced and specifying the memory function, said memory accepting data for storage at and supplying stored data at the data port responsive to, respectively write address signals and read address signals, said memory further having when in use, an instruction sequence stored in at least one first segment and including memory references to at least one second segment; and (b) an instruction processor supplying read address signals encoding the addresses of the instruction sequences to the memory and responsive thereto receiving the addressed instructions from the memory at its data port and executing them, and responsive to execution of certain ones of the instructions, generating address signals encoding addresses of cells located in at least one second segment, an improvement

comprising means for storing in the memory for at least each referenced second segment, an externally supplied numeric key/lock value in a cell having a preselected location associated with the second segment involved, and wherein the instruction processor further includes the improvement of:

(a) means for extracting from the memory at least one numeric key value to be associated with each first segment, and for storing each said key value; and

(b) key retrieval and comparison means for receiving the address signals encoding the addresses of cells grouped in at least one second segment, and responsive thereto supplying to the memory a read address signal encoding the address of the cell containing the numeric key/lock value for the specified second segment, and receiving that key/-lock value at the data port of the memory, and for receiving the key value stored by the key selecting and storing means and comparing said key value with the key/lock value, and if not valid generating an access violation signal, but if valid transmitting the address signal to the memory.

4,439,831

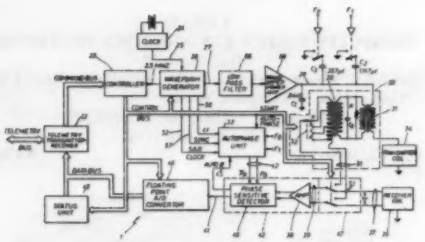
DIGITAL INDUCTION LOGGING SYSTEM INCLUDING AUTOCALIBRATION

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technical Corporation, Houston, Tex.

Filed Jun. 8, 1981, Ser. No. 271,277

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—422 **15 Claims**



1. In an induction logging tool for measuring a formation signal indicative of a characteristic of sub-surface formations traversed by a borehole, the tool including a transmitter coil responsive to a transmitter signal for inducing formation currents to flow, and a receiver coil system for generating formation signals as a result of the formation currents, a method of automatically linearizing the overall transfer function for the tool during normal logging operations comprising the steps of:

(a) generating from the transmitter signal a plurality of test calibration signals of differing amplitudes which vary over the range of expected formation response signals, the calibration signals having predetermined precise ratios therebetween;

(b) periodically measuring the tool output response to selected ones of the test calibration signals in place of the normal formation signals;

(c) calculating the values of the numerical coefficients of a predetermined linearization correction function by fitting this function to the calibration measurements from step (b), so as to produce a linear overall transfer function for the calibration measurements from step (b) once corrected by said correction function;

(d) applying the linearization correction function to subsequently obtained tool responses to formation signals as the transfer function for the tool for those measurements; and

(e) periodically repeating steps (b) to (f) thereby to obtain, a linear overall transfer function for the tool for all formation signal measurements during normal logging operations.

4,439,832

METHOD AND APPARATUS FOR CONTROLLING AN ANTI-SKID BRAKE SYSTEM

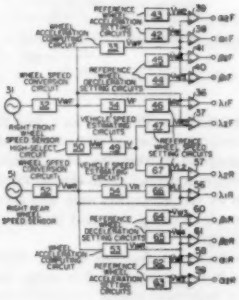
Makoto Sato, Fukuoka; Yoshikazu Tsuchiya, Fujimi, and Taiji Ohmori, Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 295,009

Claims priority, application Japan, Aug. 25, 1980, 55-116739; Sep. 2, 1980, 55-121592

Int. Cl.³ B60T *8/02*

U.S. Cl. 364—426 **14 Claims**

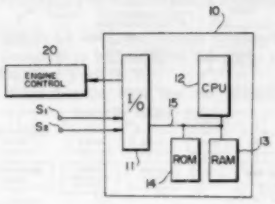


1. A method of controlling an anti-skid brake system in a vehicle, which comprises comparing a front wheel speed signal VwF indicating the peripheral speed of the front wheel and a rear wheel speed signal VwR indicating the peripheral speed of a rear wheel at the time of braking the vehicle, with a first reference wheel speed signal VR1, the value of which is lower than the vehicle speed, and a second reference wheel speed signal VR2, said signal VR2 being obtained by relating a vehicle speed signal V corresponding to the larger of signals VwF and VwR and a pre-determined value of wheel slip rate, the value of said second referene wheel speed signal VR2 being lower than the value of said first reference wheel speed signal VR1, comparing a front wheel acceleration signal VwF indicating the peripheral acceleration of the front wheel and a rear wheel acceleration signal VwR indicating the peripheral acceleration of the rear wheel, with a first reference wheel acceleration signal Vw1 representing a certain positive wheel acceleration, a second reference wheel acceleration signal Vw2, the value of which is higher than the value of the first reference wheel acceleration signal and a reference wheel deceleration signal −Vw3 indicating a certain negative wheel acceleration, and reducing the braking torque applied to the front wheel or rear wheel when (1) the value of the front wheel speed signal VwF or the rear wheel speed signal VwR is lower than the value of the first reference wheel speed signal VR1 and is higher than the value of the second reference wheel speed signal VR2 and the value of the front wheel acceleration signal VwF or rear wheel acceleration signal VwR is lower than the value of the reference wheel deceleration signal −Vw3, and (2) when the value of the front wheel speed signal VwF or the rear wheel spedd signal VwR is lower than the value of the second reference wheel speed signal VR2, until the value of the front wheel acceleration signal VwF or rear wheel acceleration signal VwR becomes higher than the value of the first reference wheel acceleration signal Vw1.

4,439,833
METHOD AND APPARATUS FOR DETECTING THE GEAR POSITION OF TRANSMISSION

Hiroshi Yamaguchi, and Kenji Ikeura, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 14, 1981, Ser. No. 302,296
Claims priority, application Japan, Sep. 29, 1980, 55-134272
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—431.09 **16 Claims**



1. An apparatus for detecting the gear position of a transmission system having a manually operable gear selection mechanism in a vehicle having an engine controlled by an accelerator pedal, comprising:

(a) means for sensing the engine speed N;

(b) means for sensing the vehicle speed V;

said vehicle having a first characteristic N/V ratio corresponding to a first gear position of said transmission system and second characteristic N/V ratio corresponding to second gear position of said transmission system;

(c) reference level establishing means for establishing a first reference level defined by a first predetermined ratio of engine speed to vehicle speed;

(d) means, independent of said manually operable gear selection mechanism and accelerator pedal, for determining which of said first and second gear positions said transmission is in utilizing a mathematic operation involving the sensed engine speed N, the sensed vehicle speed V, and the first reference level; and

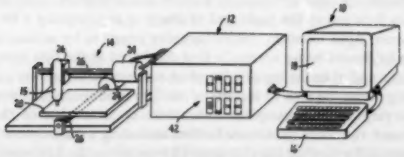
(e) means, responsive to a determination of said first gear position by said determining means, for shifting the first reference level to a second reference level defined by a second predetermined ratio of engine speed to vehicle speed,

said determining means being responsive to said shifting means for determining which of said first or second gear positions said transmission is in utilizing a mathematical operation involving the sensed engine speed N, the sensed vehicle speed V, and the second reference level.

4,439,834
TOOL MANIPULATING METHOD AND APPARATUS

William V. Dahlgren, Jr., 240 Dolores, Apt. 138, San Francisco, Calif. 94103, and Lewis S. Silverstein, 695 Connecticut Ave., #4, San Francisco, Calif. 94107

Filed Apr. 27, 1981, Ser. No. 257,581
Int. Cl.³ G06F *15/46*; G06G *7/66*; B43L *13/00*; G05B *19/42*
U.S. Cl. 364—474 **21 Claims**



1. A method of manipulating a tool of the type in which a tool is positionally manipulated with respect to a workpiece to transfer user-supplied copy information to the workpiece in accordance with dimensional information supplied by a user, including the steps of

generating a plurality of position and control parameters which are based upon the user-supplied dimensional information;

generating a plurality of copy parameters which are based upon the dimensional information and the user-supplied copy information;

transferring control, position and copy parameters and user-supplied copy information to a control means;

transforming the position and control parameters into drive signals;

obtaining master font instructions in the font style in which the user-supplied copy information is to be transferred by the tool to the workpiece from a master font memory within the control means;

modifying the master font instructions corresponding to the user-supplied copy information according to the copy parameters;

converting the modified master font instructions into drive signals;

transferring all drive signals to a tool manipulating means;

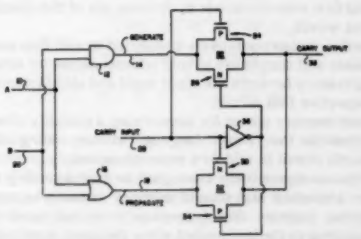
positioning the tool according to the position drive signals; and

manipulating the tool in accordance with the control and modified master font instruction drive signals.

4,439,835
APPARATUS FOR AND METHOD OF GENERATION OF RIPPLE CARRY SIGNALS IN CONJUNCTION WITH LOGICAL ADDING CIRCUITRY

David W. Best, Marion, and Jeffrey D. Russell, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 14, 1981, Ser. No. 283,266
Int. Cl.³ G06F *7/50*
U.S. Cl. 364—786 **3 Claims**



1. Ripple carry signal generating apparatus comprising, in combination:

first and second logic signal input means for providing first and second logic signals;

first logical signal combining circuit means connected to said first and second input means for receiving said first and second logic signals therefrom and outputting a logical AND combination signal as a "generate" signal;

second logical signal combining circuit means connected to said first and second input means for receiving said first and second logic signals therefrom and outputting a logical OR combination signal as a "propagate" signal;

carry input signal means for supplying carry logic input control signals;

carry output signal means for providing output signals indicative in logic level of the need to pass carry outputs to further stages of signal combination logic; and

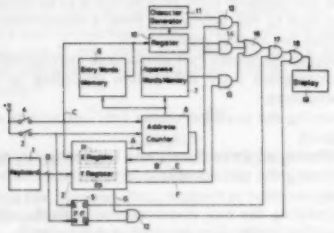
signal transmission means connected between said first and second logical signal combining circuit means and said

carry output means and connected to said carry input signal means for selectively passing propagate and generate signals to said output means in response to control signals from said carry input signal means.

4,439,836
ELECTRONIC TRANSLATOR

Kunio Yoshida, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1980, Ser. No. 199,526
Claims priority, application Japan, Oct. 24, 1979, 54-137921
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **8 Claims**



1. An electronic translator device for obtaining a second word represented in a second language equivalent to an input word in a first language, comprising:

input means for entering the input word;

first memory means for memorizing a plurality of first words in the first language, each of said first words comprising one or more first letters which remain unchanged regardless of inflection and one or more second letters which change according to inflection;

address means operatively connected to said input means and responsive to entry of the input word for addressing said first memory means to develop one of the plurality of first words;

detection means operatively connected to said first memory means and responsive to said address means for detecting eqivalency between the input word and said first letters of respective first words;

second memory means for memorizing a plurality of second words in the second language corresponding to first words stored in said first memory means;

first means operatively connected to said detecting means for activating said second memory means whereby said second memory means develops a second word corresponding to the input word when the input word is equivalent to one of said first words; and

second means operatively connected to said detecting means for indicating that one of said first words in said first memory means comprises a noninflected form of the input word.

4,439,837
NON-VOLATILE MEMORY SYSTEM FOR INTELLIGENT TERMINALS

Peter P. Alena, Kettering, and Eduard Schulz, Centerville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 16, 1981, Ser. No. 274,125
Int. Cl.³ G06F *15/06*
U.S. Cl. 364—900 **10 Claims**

1. A terminal comprising:

a first memory system for storing data including a plurality of function programs;

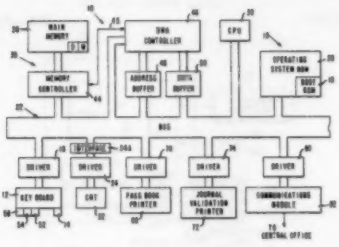
a second memory system;

a processor means operatively coupled to said second memory system to execute instructions therefrom;

entry means for selecting a function program to be executed;

means for transferring data, including a function program which is selected by said entry means, from said first memory system to said second memory system to enable said processor means to execute said selected function program;

means for determining the end of a said selected function program executed by said processor means; and



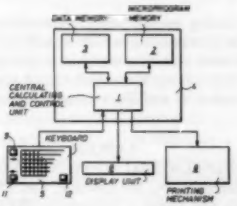
bus means for operatively connecting said first and second memory systems, said processor means, said entry means, said transferring means, and said determining means;

said second memory system being smaller in storage capacity but faster in operating speed than said first memory system to enable said selected function program to be executed by said processor means at the operating speed of said processor means.

4,439,838
ONE LINE TEXT DISPLAY WITH TWO INPUT LOCATIONS

Wolfgang Klingenberg, Lahstedt, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,586
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028439
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—900 **7 Claims**



1. In a word processor having a keyboard and a display unit for the one-line display of a succession of characters constituting a section of text, the display unit presenting a row of display locations each arranged to display one character, with the display location at the right end of the row constituting a first character input location, each character keyed in by actuation of the keyboard being normally first displayed at the first input location and then being displayed at successive locations extending along the row to the left of the first input location upon the keying in of subsequent characters by actuation of the keyboard, the word processor further including a data memory connected for storing the characters keyed in via the keyboard, and control means connected to the keyboard, the data memory and the display unit for controlling the display of stored text on the display unit, the improvement wherein a display

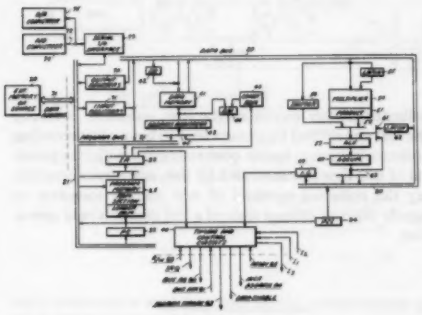
location of said display unit to the left of said first input location constitutes a second character input location, and said processor includes means operatively associated with said control means for selectively causing said second location to become that input location at which characters keyed by actuation of said keyboard are first displayed when the characters being displayed on said unit are derived from said data memory.

4,439,839

DYNAMICALLY PROGRAMMABLE PROCESSING ELEMENT

Kristine N. Kneib, La Jolla, and George Vensko, Ramona, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,432
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—900 **15 Claims**



1. A dynamically programmable processing element (DPPE) particularly adapted for use in processing digital signals and having the ability to receive data and program instructions from an external source comprising:

a program bus connected to said external source for transmitting and receiving program data from said external source,

a data bus for transmitting and receiving digital data,

input and output registers coupled between said data bus and said program bus for storing transmitted or received data present on either bus,

a program memory having an input coupled to said program bus and means coupling the output of said program memory to said program bus,

a data memory having addressable input means coupled to said program bus and an output coupled to said data bus, whereby said program memory can receive program information from an external source and data from said data memory can be transferred to said external source.

4,439,840

REAL-TIME ORDINAL-VALUE FILTERS UTILIZING PARTIAL INTRA-DATA COMPARISONS

Guy B. Coleman, Northridge; James W. Henderson, Woodland Hills, and Jacob M. Sacks, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 28, 1981, Ser. No. 306,253
Int. Cl.³ G06F *7/06, 9/64*
U.S. Cl. 364—900 **5 Claims**

1. An apparatus for ordering, as a function of magnitude, a set of R applied data signals, where R is an odd number and where the ordering is accomplished in a plurality of iterative operating cycles, this apparatus comprising:

(A) a plurality of pair-ordering means, each of said means having a first and second input and a first and second output, each of said means being:

(1) for comparing the magnitude of a signal presented at the first input with the magnitude of a signal presented at the second input,

(2) for transmitting to a predetermined one of said first and second outputs that input signal having the smaller relative magnitude, and

(3) for transmitting to the predetermined other one of said first and second outputs that input signal having the greater relative magnitude;

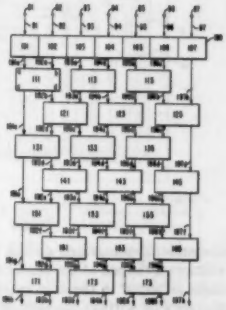
(B) said plurality of pair-ordering means being arranged into a first group and a second group, each group having $((R-1)/2)$ ordering means, with the individual ordering means of each group being identified as a first through $((R-1)/2)$nd pair-ordering means;

(C) data bus means for transmitting data signals back and forth between said first and second pair-ordering groups during said plurality of iterative operating cycles as the ordering is performed;

(D) said data signals, when on said bus means, forming an intermediate signal set of a first through Rth intermediate signal;

(E) multiplexer means, responsive to said R, originally-unordered, applied data signals, and receiving over said bus means from said second group said intermediate signal set, said multiplexer means being: for outputting, upon external selective command, either,

(1) at the start of the ordering process, said applied original data signals as an initial-set first through Rth intermediate signal, or



(2) after the start of the ordering process, said received intermediate signals;

(F) said first group receiving, over said bus means, said first through $(R-1)$st intermediate signals from said multiplexer means, said first through $((R-1)/2)$nd individual pair-ordering means of said first group respectively receiving and ordering the $((R-1)/2)$ successive, non-overlapping signal pairs formed by pair-wise combining said first through $(R-1)$st intermediate signals, with the Rth intermediate signal left unpaired and unordered, where for any J from 1 through $((R-1)/2)$, the first and second inputs of the Jth ordering means respectively receive the $((2\times J)-1)$st and $(2\times J)$th intermediate signals, and where the signals transmitted to the first and second outputs of this Jth pair-ordering means respectively form the $((2\times J)-1)$st and $(2\times J)$th elements of a new R-member intermediate signal set whose Rth element is said previous Rth intermediate signal which has been left unpaired and unordered by this first group;

(G) said second group receiving, over said bus means from said first group, the second through Rth elements of said new intermediate signal set, said first through $((R-1)/2)$nd individual pair-ordering means of said second group respectively receiving and ordering the $((R-1)/2)$ successive, nonoverlapping signal pairs formed by pair-wise combining said second through Rth interme-

diate signals, with the first intermediate signal left unpaired and unordered, where for any J from 1 through ((R−1)/2), the first and second inputs of the Jth ordering means respectively receive the (2×J)th and ((2×J)+1)st intermediate signals, and where the signals transmitted to the first and second outputs of this Jth pair-ordering means respectively form the (2×J)th and ((2×J)+1)st elements of a new R-member intermediate signal set whose first element is said previous first intermediate signal which has been left unpaired and unordered by this second group;

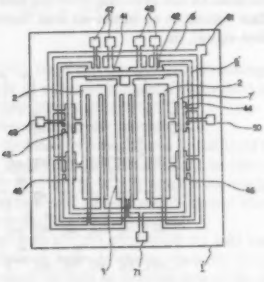
(H) the output new intermediate signal set from said first group forming the desired ordered magnitude sequence after the ((R+1)/2)nd cycle of data signals through said first group.

4,439,841

SEMICONDUCTOR MEMORY DEVICES

Hideo Itoh, and Takahiko Yamauchi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 10, 1981, Ser. No. 272,367
Claims priority, application Japan, Jun. 10, 1980, 55/78188
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—51 **11 Claims**



1. A semiconductor integrated circuit including a plurality of internal circuits arranged at the center thereof, a plurality of control circuits arranged in the area surrounding said internal circuits, a plurality of wirings connecting said control circuits and said internal circuits, a plurality of signal lines connecting said control circuits with each other, and at least one electric power supply line supplying a predetermined amount of voltage to said internal circuits and said control circuits, wherein the improvement comprises: said plurality of signal lines and said at least one electric power supply line being arranged in the area outside said plurality of wirings connecting said control circuits and said internal circuits.

4,439,842

BIPOLAR TRANSISTOR READ ONLY OR READ-WRITE STORE WITH LOW IMPEDANCE SENSE AMPLIFIER

Sashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

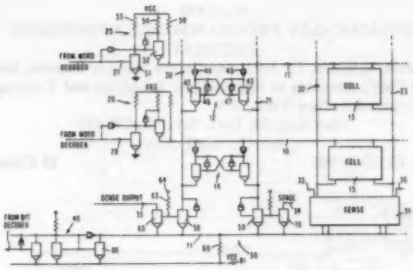
Continuation of Ser. No. 107,812, Dec. 28, 1979. This application Aug. 6, 1981, Ser. No. 290,547
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—104 **3 Claims**

1. A data store of the type having bit lines and word lines and a semiconductor device located at cross over points of a word line and a bit line,

wherein the semiconductor device comprises a single emitter bipolar transistor and means connecting the emitter terminal of the transistor to the associated bit line,

and a plurality of current sensing circuits connected to conduct between the bit lines and a common point, said current sensing circuits having a low impedance in the circuit between said emitter terminals, wherein the improvement comprises,

a first transistor and a second transistor in the current sensing circuit for each bit line each having an emitter terminal connected to a common current source, the current source providing a sufficiently high base current during a read operation to maintain said low impedance in the



collector-emitter circuit of the first transistor, whereby the first and second transistors tend to have corresponding collector currents, means connecting the collector terminal of said first transistor to a bit line, and means connecting the collector terminal of said second transistor to signify the data storage state of a cell during a read operation.

4,439,843

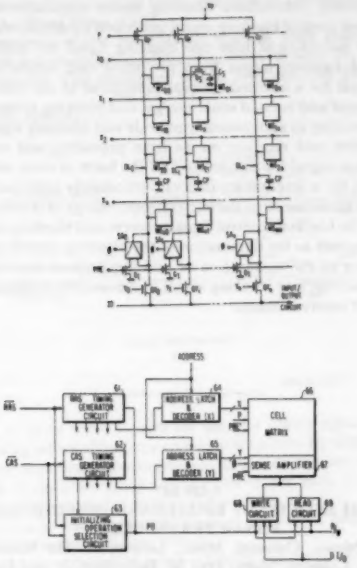
MEMORY DEVICE

Ryoichi Takamatsu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,131
Claims priority, application Japan, Nov. 17, 1980, 55-161519
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—218 **14 Claims**

1. A memory device comprising a plurality of address lines, a plurality of data lines intersecting with said address lines, a plurality of memory cells disposed at the intersections of said address lines and said data lines, a plurality of sense amplifiers each having an output terminal, a plurality of connection means each for connecting the output terminal of one of said sense amplifier to the associated data line, means for receiving a row strobe signal, means for receiving a column strobe signal, means for receiving row address information in response to an active level of said row strobe signal, means for receiving column address information in response to an active level of said column strobe signal, row selection means for selecting said address lines by said row address information, column selection means for selecting said data lines by said column address information, first control means for enabling said row selection means and said column selection means so as to perform normal memory operation when said column strobe signal is made at the active level after said row strobe signal has been made at the active level, a plurality of set means each coupled to the associated sense amplifier for operatively setting the output terminal of said associated sense amplifier at a predetermined potential, said predetermined potential corresponding to one of logic levels to be stored, detection means generating a detection signal when said row strobe signal is made at the active level after said column strobe signal has

been set at the active level, and second control means for simultaneously enabling said plurality of set means thereby to



make potentials of said data lines at said predetermined potential in response to said detection signal.

4,439,844

SALMON COUNTER WITH SEPARATE KING SALMON TABULATOR

Albert S. Menin, Sylmar, Calif., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 5, 1981, Ser. No. 308,757
Int. Cl.³ G01S *15/96*
U.S. Cl. 367—87 **6 Claims**

1. In a system for counting migrating fish swimming in a stream including a mechanical support structure adapted to be positioned on the bottom of said stream near the shore thereof and extending a substantial distance into said stream essentially perpendicularly with respect to the direction of stream flow including means forcing the fish to swim over said structure,

an acoustic transducer having a narrow beam width positioned near the shore end of said structure and directed to insonify a volume of water in said stream immediately above said structure, and to receive echo return signals therefrom,

electrical means connected to said transducer including a source of electrical power,

a master clock connected to said source for emitting clock pulses at regular intervals,

a transmitter responsive to said clock pulses for providing echo ranging pulse signals to said transducer,

a delay circuit responsive to said transmitted pulses,

a receiver connected to said transducer and threshold detector means connected to said receiver,

a multistage ring counter providing a plurality of successive output pulses,

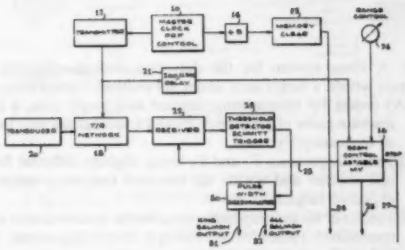
a scan control multivibrator responsive to said delay circuit for enabling said receiver and for enabling said ring counter,

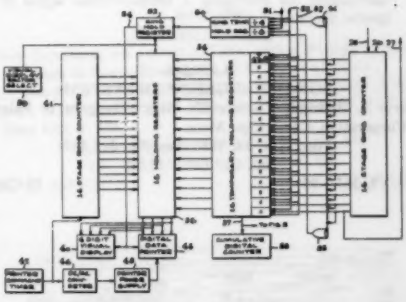
a first holding register having a plurality of stages corresponding to the number of stages of said ring counter including a divider circuit at the input to each stage and connections from each stage of said ring counter to a corresponding one of said divider circuits to thereby provide pulse signals to each stage of said holding register representing one sector along the length of said mechanical support structure;

means connecting said multivibrator means to each of said divider circuits;

divider means connected to said master clock, and means responsive to said divider means output for providing a reset signal to each of said divider circuits;

a second holding register having a number of stages corresponding to the number of stages of said ring counter and said first named holding register and means interconnecting corresponding stages of said holding registers;





and display means connected to said second holding register including timer means;

means providing a separate count of king salmon including a pulse width discriminator connected to said receiver and threshold detector means for separating from the received pulses a group of pulses of longer duration representing king salmon,

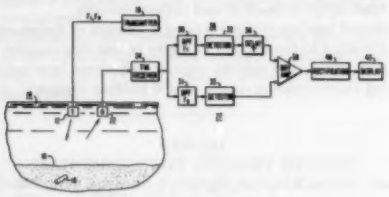
separate holding register means including divider circuit means connected to receive the pulses representing king salmon and means connecting said ring counter and said divider circuit means to said separate holding register means,

said display means including means connected to said separate holding register means for separately displaying the counts of king salmon.

4,439,845
SONAR SYSTEM

Kenneth P. Geohegan, Jr., Catonsville, and Henry M. Gruen, Arnold, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 3, 1981, Ser. No. 327,151
Int. Cl.³ G01S *15/04*
U.S. Cl. 367—87 **3 Claims**



1. A sonar system for the detection and classification of targets within a target area under surveillance comprising:

(A) means for transmitting, toward said target area, a first discrete pulse of frequency F_1 and a second discrete pulse of frequency F_2;

(B) said frequencies F_1 and F_2 being slightly different from one another and within the resonant frequency range of expected targets;

(C) receiver means responsive to acoustic returns due to said transmitted pulses for providing a composite output signal;

(D) means for separating said output signal into respective frequency component signals corresponding to the transmitted frequencies F_1 and F_2;

(E) means for detecting respective ones of said frequency component signals to obtain the envelopes thereof;

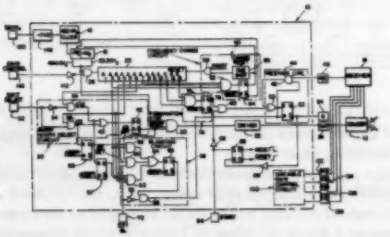
(F) means for subtracting respective detected signals; and

(G) rectifying means coupled to the output of said means for subtracting for providing a unidirectional signal in response thereto.

4,439,846
SONAR RANGEFINDER SYSTEM

Marie T. Rodriguez, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 18, 1981, Ser. No. 322,469
Int. Cl.³ G01S *15/08*
U.S. Cl. 367—99 **10 Claims**



1. A sonic rangefinder system for use with a transmitter for transmitting a burst of sonic energy toward a subject and a receiver for generating an electronic signal responsive to receipt of an echo from the subject comprising:

means for generating an electronic signal burst for transmission to the transmitter to provide the burst of sonic energy;

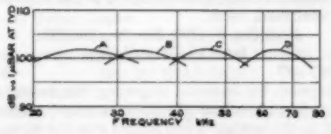
means for receiving the electronic signal from the receiver so as to provide an output range signal representative of the subject distance in accordance with the elapsed time between transmission and reception of the echo signal; and

selectively controllable blanking means responsive to an input control blanking signal generated externally thereof for providing at least one blanking signal for inhibiting said receiver means from providing said output range signal for a selected interval subsequent to the transmission of said burst of sonic energy, said blanking means also operating to automatically provide said blanking signal to inhibit said receiver means from providing said output range signal for the duration of the burst of sonic energy and for a determinate interval immediately subsequent to the transmission of the burst of sonic energy in the absence of the blanking control signal wherein said blanking means responds to the termination of the blanking control signal prior to the termination of said determinate interval by removing said blanking signal to prevent the inhibiting of said receiver means.

4,439,847
HIGH EFFICIENCY BROADBAND DIRECTIONAL SONAR TRANSDUCER

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, trustees

Filed Dec. 21, 1981, Ser. No. 332,457
Int. Cl.³ H04R *17/00*
U.S. Cl. 367—151 **16 Claims**



1. In combination in an electroacoustic transducer adapted for high efficiency broadband underwater sound generation in the frequency region above 5 kHz, a support structure including a base portion, a plurality of thin-walled vibratile cylindrical transducer elements of different diameters, a plurality of mounting means associated with said support structure for holding said plurality of cylindrical transducer vibratile elements in axial alignment with relation to said base portion of said support structure, a plurality of conically-shaped sound reflecting surfaces of different diameters, means for locating said plurality of sound reflecting conical surfaces to concentrically surround the vibratile wall surfaces of said plurality of cylindrical transducer elements, a sound conducting waterproof housing structure surrounding and enclosing said plurality of cylindrical transducer elements and said plurality of conical sound reflecting surfaces, and sound conducting means contained within said housing structure for establishing efficient sound transmission between the vibratile surfaces of said cylindrical transducer elements and said conical reflecting surfaces and also between said conical reflecting surfaces and said housing structure.

4,439,848

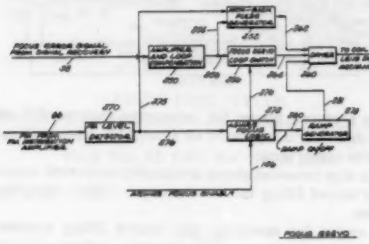
FOCUSING SYSTEM FOR VIDEO DISC PLAYER

Ludwig Ceshkovsky, Fountain Valley, and Wayne R. Dakin, Redondo Beach, both of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Continuation of Ser. No. 131,513, Mar. 18, 1980, abandoned, which is a continuation of Ser. No. 890,670, Mar. 27, 1978, abandoned. This application Sep. 1, 1981, Ser. No. 298,405

Int. Cl.³ G11B 7/12

U.S. Cl. 369—45 22 Claims



1. A focus servo system for use in a player apparatus for deriving information from an information bearing surface, said player apparatus including optical means for directing a source beam of radiation along a prescribed optical path to said surface, said focus servo system comprising:

objective lens means for focussing the source beam on the information bearing surface;

focus error detection means for detecting the position of said objective lens means relative to the information bearing surface;

lens drive means, selectively responsive to said focus error detection means, for moving said objective lens means relative to the information bearing surface along the path of the source beam;

focus acquisition signal means, selectively generating an output signal to said lens driver means in a focus acquisition mode, each cycle of said signal driving said objective lens means in a first direction at a first rate through a predetermined range of travel that includes an optimum focussing position; and

kick-back signal means, responsive to said focus error detection means, for selectively providing a relatively brief pulse as an additional output to said lens driver means to intermittently drive said objective lens means in a direction opposite to said first direction,

said kick-back pulse causing said objective lens means to move in said opposite direction at a second rate greater than said first rate and to subsequently move in said first direction at said second rate, whereby said objective lens means scans back and forth past said optimum focussing position a plurality of times in a single cycle of said focus acquisition output signal.

4,439,849

ROTATIONAL SPEED CONTROLLING APPARATUS FOR RECORDING DISC

Daiki Nabeshima, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 2, 1981, Ser. No. 298,914

Claims priority, application Japan, Sep. 30, 1980, 55-136559

Int. Cl.³ G11B 19/24

U.S. Cl. 369—50 13 Claims

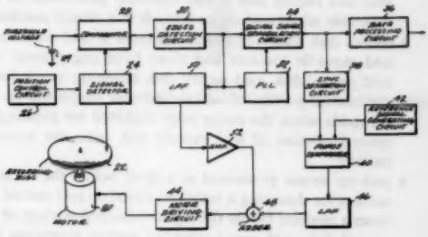
1. An apparatus for controlling a rotational speed of a recording disc in reproducing an information signal pre-recorded on said disc as a train of pulses, said information signal being a digital signal including a synchronizing signal and pre-recorded while said disc is rotating with a constant linear velocity, comprising:

a motor for rotating said recording disc;

means for reproducing said information signal pre-recorded on said disc;

means for extracting said synchronizing signal from said information signal reproduced by said reproducing means;

phase comparing means for comparing the phases between said synchronizing signal and a reference signal and generating a phase difference signal in response to the difference of phases between said synchronizing signal and said reference signal, said reference signal having a predetermined phase relationship to said synchronizing signal while said disc is rotated with a constant linear velocity;



detecting means for detecting the leading and trailing edges of the pulses of said information signal reproduced by said reproducing means and generating a pulse train signal having pulses of constant amplitude and width;

smoothing circuit means for smoothing said pulse train signal from said detecting means to produce a dc signal; and

means for adding the signals from said smoothing circuit means and from said phase comparing means; and

motor driving means for controlling the rotation speed of said motor in response to the signal from said adding means.

4,439,850

RECORD PLAYER

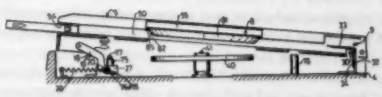
Ichiro Takahara, and Tadahiko Yabu, both of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

PCT No. PCT/JP80/00048, § 371 Date Nov. 16, 1981, § 102(e) Date Nov. 16, 1981, PCT Pub. No. WO81/02805, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 24, 1980, Ser. No. 324,394

Int. Cl.³ G11B 3/36, 19/00, 17/00

U.S. Cl. 369—77.2 4 Claims



1. In a record player for use with a record jacket having a record disk therein, said record player having a liftable cover body pivoted at one end and free at the opposite end, and having a side face at said free end with an inlet formed in said side face, and said record jacket comprising a holder surrounding the outer circumference of said record disk, an outer case in which the said holder is removably inserted, and locking means for locking said holder into said outer case, said record jacket being inserted into the inlet provided at the side face of the free end of said liftable cover body wherein after insertion said outer case may be withdrawn from said record player leaving said record disk and said holder within said cover body, the improvement comprising:

a turntable within said record player, said turntable having a diameter smaller than that of the signal-recorded portion

of said record disk, said turntable supporting said record disk when said record disk is inserted into said record player;

a cover body lifting means for biasing said cover body to an open position for the insertion and withdrawal of said record jacket, said lifting means including holding means for holding the cover body in a closed position when said record disk is being played;

an unlocking means for unlocking said locking means when said record jacket is inserted into said cover body;

said cover body including means for supporting said holder therein after said record jacket has been withdrawn such that said record disk is automatically positioned on said turntable when said cover body is in a closed position;

a record disk clamping means disposed in said cover body and movable towards and away from engagement with said record disk, said record disk clamping means facing the central portion of said record disk supported on said turntable when the cover body is closed for pressing the central portion of said record disk onto the turntable surface;

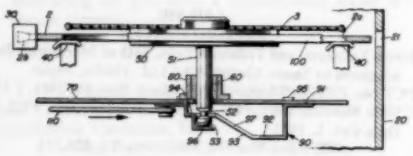
a pick-up means positioned at a level below the turntable surface for detecting a recorded signal on said record disk from a position below the signal-recorded portion of said record disk, said signal-recorded portion extending radially outward from the turntable surface.

4,439,851

TURNTABLE LIFTING APPARATUS OF A VIDEO DISC PLAYER

Majime Kiguchi, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 6, 1981, Ser. No. 280,479
Claims priority, application Japan, Jul. 11, 1980, 55-97840[U]
Int. Cl.³ G11B *17/04*
U.S. Cl. 369—77.2 **5 Claims**



1. A turntable lifting apparatus of a video disc player comprising:

a turntable for supporting a video disc;

a chassis attached to said player under said turntable;

a bearing attached to said chassis for rotatably supporting a shaft of said turntable;

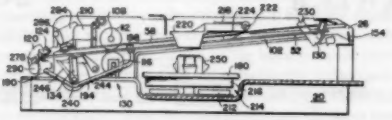
a turntable lifter slidably attached to said chassis, said lifter having an inclined slotted plate which engages with a portion of said turntable shaft for lifting said turntable, said shaft has a groove adjacent an end portion of said shaft, said groove engaging with said inclined slotted plate, said turntable lifter further comprising: a bottom horizontal portion for defining the lowest position of said turntable: an upper horizontal portion for defining the uppermost position of said turntable; said slot being formed in the longitudinal direction of said inclined slotted plate, which contacts with said groove; a tongue formed at said upper horizontal portion and having a horizontal surface for receiving and supporting the end portion of said turntable shaft after said turntable is lifted; and a rectangular hole formed in said upper horizontal portion at a position which is opposite the horizontal surface of said tongue, said hole being linked with said slot.

4,439,852

DISC PLAYER HAVING RECORD HANDLING APPARATUS

Larry M. Hughes, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 3, 1982, Ser. No. 374,377
Int. Cl.³ G11B *17/04*
U.S. Cl. 369—77.2 **10 Claims**



1. In a record player for recovering prerecorded signals from a disc record supported on a turntable; a record handling apparatus comprising:

(A) a stop mounted above a turntable-supported record;

(B) a record lifting member having a record engaging portion;

(C) means for mounting said record lifting member for movement between a first position where said record engaging portion is disposed below said turntable, and a second position where said record engaging portion extends above said turntable;

(D) means for selectively raising and lowering said record engaging portion; the record engaging portion, when raised, engaging the underside of a turntable-supported record to lift said record to a raised position against said stop;

(E) a record receiving pad;

(F) means for mounting said record receiving pad above said turntable for movement between an advanced position and a retracted position in said advanced position, said record receiving pad being in the path of a record between said turntable-supported position and said raised position; in said retracted position, said record receiving pad being maintained out of said path; and

(G) means for selectively advancing and retracting said record receiving pad; wherein to transfer a record from said turntable to said receiving pad, said pad is retracted out of the way of said record, said record lifting member is raised to lift said record above said pad, said pad is advanced, and said record lifting member is lowered to deposit said record on said pad.

4,439,853

CAPACITIVE PLAYBACK STYLUS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,057
Int. Cl.³ G11B *9/06*
U.S. Cl. 369—126 **4 Claims**

1. A capacitive information disc playback stylus for use with a capacitive information disc which has an information track recorded as geometric surface variations, said stylus compris-

ing a dielectric support element having in one portion a conical body terminating at a constricted tip wherein the stylus comprises:

a conical prow surface;

a flat electrode surface remote from the prow;

shoulders joining the constricted tip to the conical body;

side surfaces which join the prow and the flat electrode surface; and

a shank bonded to said conical body remote from said tip;

wherein the side surfaces, the flat electrode surface, and the prow surface define the edges of a surface for engaging said disc.

4,439,854

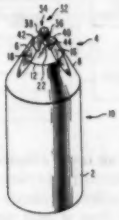
VIDEO DISC STYLUS

Michael E. Miller, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,058

Int. Cl.³ G11B 9/06

U.S. Cl. 369—126 **1 Claim**



1. A playback stylus for use with a capacitive information disc which has an information track recorded as geometric surface variations, wherein the stylus comprises:

a dielectric support element having a conical end;

two flats in the conical end;

a constricted terminal portion defined by two side surfaces, shoulders interconnecting the two side surfaces and the two flats, a prow defined by a first conical region of said conical end between the flats, a second conical region of said conical end remote from the prow, and a surface defined by the prow, the two side surfaces, and the second region for engaging said disc; and

a shank bonded to said dielectric support element remote from said constricted terminal portion;

wherein the two flats are convergent, and intersect in said first region; and wherein the conical portion of said second conical region between said two side surfaces is an electrode surface.

4,439,855

CAPACITIVE PLAYBACK STYLUS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,285

Int. Cl.³ G11B 9/06

U.S. Cl. 369—126 **7 Claims**

1. A capacitive information disc playback stylus comprising:

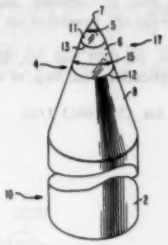
a shank;

a dielectric support element at one end of the shank;

a first conical region of a first angle within the range of 40 to 60 degrees in a portion of the dielectric support element, said first conical region terminating at a constricted tip;

a second conical region adjacent to the first conical region and to the shank of a second angle less than the first angle, said second angle being about 30 degrees; and

an information recovery terminal region in the first conical region for recovering information recorded in an informa-



tion track of a capacitive information disc wherein said region is a keel tip.

4,439,856

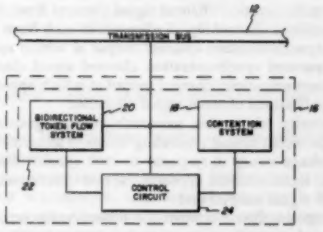
BIMODAL BUS ACCESSING SYSTEM

Mehmet E. Ulug, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 24, 1982, Ser. No. 351,820

Int. Cl.³ H04J 6/00

U.S. Cl. 370—85 **15 Claims**



1. A bus communication system comprising a plurality of bus interface units (BIUs), each connected to a transmission bus having a straight-line topology at respective spaced locations along said bus, each respective BIU including:

(A) transmission means for transmitting information packets on said bus, said transmission means being operable in:

(1) a contention mode wherein said transmission means completes the transmission of an information packet only after that respective BIU senses said bus and determines that no additional information packets are also being simultaneously transmitted on said bus; and

(2) a token passing mode wherein said transmission means transmits and information packet only after the expiration of a time interval unique to that respective BIU and determined by the relative location of that respective BIU and the last BIU to transmit one of an information and a start-up packet on said bus; and

(b) control means for causing said transmission means to switch between said contention and token passing modes of operation as a function of the transmission activity on said bus.

4,439,857

DIGITAL DATA TRANSMISSION SYSTEM

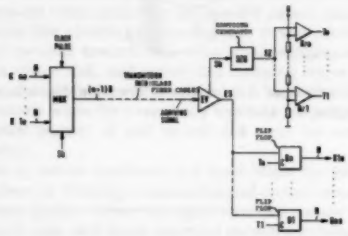
Erich Rauth, Auenwald, and Hans-Jürgen Schmack, Allmersbach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,658

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044620

Int. Cl.³ H04J 3/06

U.S. Cl. 370—100 3 Claims



1. In a digital time multiplex communications system including a transmitter and receiver connected together via a transmission path for transmission of a time multiplex signal containing the signal elements of a synchronization channel and of a plurality of communications channels, the signal elements having the same repetition rate in each channel, the signal transmitted by the transmitter being constituted by a succession of time frames and each frame being composed of a succession of equal element intervals each of which contains a signal element of a respective channel, which system includes, in the receiver:

means connected to the transmission path for separating the synchronization channel signal element from the communications channel signal elements of each from and having a synchronization channel output at which appears each separated synchronization channel signal element and a communications channel output at which appea- the communications channel signal elements;

externally triggerable sawtooth voltage generator means connected to said separating means to generate a sawtooth voltage sweep in response to each synchronization channel signal element appearing at said synchronization channel signal output; and

voltage amplitude comparison means composed of a plurality of comparison stages each associated with a respective communications channel and connected to receive the sawtooth voltage generated by said generator means, each said comparison stage being arranged to produce an output signal when the sawtooth voltage reaches a respective value which differs by a fixed amount from one stage to the next such that the output signal from each said stage is produced at a time corresponding to the appearance at said communications channel output of said separating means of a signal element of its associated communications channel, the improvement wherein:

the signal elements of each communications channel are binary coded signal elements;

each synchronization channel signal element is a synchronization pulse with a higher amplitude than each communications channel signal element;

said separating means comprise amplitude threshold switch means connected for separating the synchronization channel signal element from the communications channel signal element of each frame; and

said system further comprises, in the receiver, a plurality of data flipflops each associated with a respective communications channel and each having a data input connected to said communications channel output of said separating means, a clock pulse input connected to receive the output signal produced by the respective comparison stage associated with the same communications channel for causing said flipflop to store a representation of the signal element then present at its said data input, and an output providing a signal corresponding to its stored representation, such that said output of each said flipflop provides a signal sequence corresponding to the signal elements of a respective communications channel of the transmitted time multiplex signal.

4,439,858

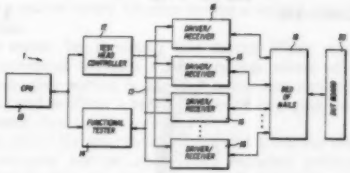
DIGITAL IN-CIRCUIT TESTER

Gerald W. Petersen, Walnut Creek, Calif., assignor to Zehntel, Inc., Walnut Creek, Calif.

Filed May 28, 1981, Ser. No. 267,734

Int. Cl.³ G01R 31/28; G06F 11/00

U.S. Cl. 371—20 7 Claims



1. A digital in-circuit tester adapted for use with a computer for testing the electrical properties of components interconnected at electrical nodes in a circuit under test, and where the components operate from at least one reference power supply voltage, the tester having at least one response line connectable to one of the electrical nodes of the circuit under test, comprising:

(a) a bed-of-nails test fixture having a plurality of test pins for contacting the electrical nodes of the circuit under test;

(b) a controller responsive to the computer for controlling the generation of the test sequence in which a sequence of digital test signals are generated and applied to test pins connected to the circuit under test and a response signal obtained therefrom on a connected response signal line;

(c) a functional tester operatively coupled to said computer and responsive to the response signal on said connected response signal line for performing tests on said response signal to determine electrical properties of the circuit under test; and

(d) a plurality of digital driver/receiver circuits responsive to said controller for supplying the digital test signals to the test pins and for receiving a response signal from the circuit, each driver/receiver circuit programmable to supply one of said digital test signals to the circuit under test, said driver/receiver circuits having

(i) a distributed plurality of selectable, programmable reference power supplies, each said power supply associated with at least one of said driver/receiver circuits, for generating the reference power supply operating voltages for components of the circuit under test to receive test signals from the associated driver/receiver circuits,

(ii) a plurality of selectable switch means responsive to said computer for selectively connecting said driver/-receiver circuits and said programmable power supplies to test pins in said bed-of-nails test fixture, said plurality of selectable switch means selectively connecting a node of the circuit under test to a response signal line,

(iii) each said programmable power supply in said plurality of power supplies, when connected by said plurality of switch means to the circuit under test, defining a power supply current loop therebetween for conduct-

ing power supply current to and from the circuit under test, and

(iv) each said driver/receiver circuit, when conected by said plurality of switch means to a node of the circuit under test, defining driving digital test signal current loops, each test signal current loop including a portion of said power supply current loop,

(e) said driver/receiver circuits selectively connecting their associated said referenced programmable power supplies to said bed-of-nails fixture so that the currents in said referenced power supply current loops and said digital test signal current loops for testing a component are isolated from the currents in any other said power supply and digital signal test signal current loops, and thus localized to the driver/receiver circuits involved in testing the component.

4,439,859

METHOD AND SYSTEM FOR RETRANSMITTING INCORRECTLY RECEIVED NUMBERED FRAMES IN A DATA TRANSMISSION SYSTEM

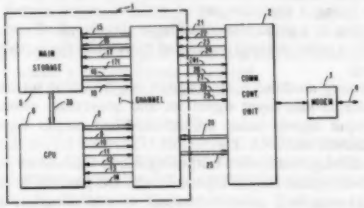
Robert A. Donnan, Chapel Hill, N.C., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,672

Claims priority, application European Pat. Off., Aug. 26, 1980, 80430015.0

Int. Cl.³ G08C *25/00*

U.S. Cl. 371—32 **8 Claims**



1. In a data transmission system in which a transmitting station sends sequentially numbered information frames to a receiving station, each of said frames including a send sequence number (N(S)) and an information field, a system for retransmitting incorrect frames, characterized in that:

the receiving station includes:

means (**69**) for receiving said information frames,

means (**70**) for checking received frames for errors,

means (FIG. **12**) for determining the send sequence number (N(S)) of received frames found to be in error,

means (**1**, FIG. **12**) for sending to the transmitting station a Checkpoint message containing a receive sequence number (N(R)) which indicates the send sequence number (N(S)) of the most recently received, error-free, non-retransmitted information frame, and, if at least one incorrect frame was received, at least one identifier (N(X)) which indicates the send sequence number (N(S)) of said at least one incorrect frame whose retransmission is requested, said Checkpoint message being sent after the receiving station has received a predetermined number of information frames greater than one, and in that:

the transmitting station includes:

means (**69**) for receiving said Checkpoint message,

retransmission means (**52**, **57**, **59**, **60**, **75**) for retransmitting those frames whose send sequence number (N(S)) is equal to one of the identifiers (N(X)) in the Checkpoint message and which have not previously been retransmitted; for associating with each retransmitted frame a variable (V(T)) whose value indicates the order in which the frame is retransmitted relative to the sequence of frames transmitted for the first time; and for retransmitting those frames whose send sequence number (N(S)) is equal to one of the identifiers (N(X)) and which have previously been retransmitted, solely if the value of the variable V(T) associated with such frames is less than that of the receive sequence number (N(R)) in the Checkpoint message, and

means (**52**, **79**) for updating the value of the send state variable (V(T)) associated with each retransmitted frame.

4,439,860

OPTICAL PUMPING IN A WHISPERING MODE OPTICAL WAVEGUIDE

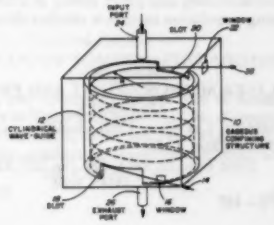
Norman A. Kurnit, Santa Fe, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 11, 1981, Ser. No. 291,885

The portion of the term of this patent subsequent to Jul. 6, 1999, has been disclaimed.

Int. Cl.³ H01S *3/091*

U.S. Cl. 372—70 **9 Claims**



1. An optical pumping apparatus which comprises in combination:

a. an active laser medium capable of laser action at a first wavelength;

b. means for producing a beam of laser radiation having a second wavelength, said second wavelength radiation being capable of interacting with said active laser medium to produce a population inversion therein suitable for generating said laser action at said first wavelength;

c. waveguide means having a substantially cylindrical surface with a radius R for propagating said second wavelength radiation in a helical direction along said cylindrical surface, said cylindrical surface having an additional curvature formed therein with a radius ρ which confines said second wavelength radiation to a small mode volume and a high intensity as said second wavelength radiation propagates along said waveguide means;

d. means for introducing said second wavelength radiation into said waveguide means;

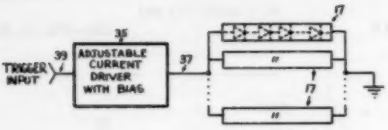
e. means for confining said laser medium in the propagation path of said second wavelength radiation as said second wavelength radiation propagates along said waveguide means whereby a substantial interaction length of said high intensity of said second wavelength radiation and said laser medium is formed, thereby producing said population inversion in said laser medium and said laser action at said first wavelength therefrom; and

f. means for extracting said first wavelength of laser radiation from said waveguide means.

4,439,861
SOLID STATE LASER WITH CONTROLLED OPTICAL PUMPING

James N. Bradford, Fairfax County, Va., assignor to MRJ, Inc., Fairfax, Va.

Filed Aug. 7, 1981, Ser. No. 291,191
Int. Cl.³ H01S 3/10
U.S. Cl. 372—25 11 Claims



1. A laser comprising

a solid state lasing element;

means for extracting energy from said lasing element;

pumping means optically coupled to said solid state lasing element;

means for causing said pumping means to apply pump power to said solid state lasing element at a predetermined power level for a time sufficient to cause the population inversion to grow to an excess over threshold;

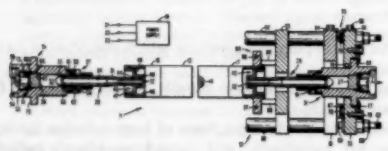
means for diminishing said pump power to a lower level after a predetermined time interval t_a; and

means for increasing said pump power at a time t_b when the declining population inversion reaches threshold.

4,439,862
RIGID LASER MIRROR MOUNT AND PROTECTION ASSEMBLY

Galen E. Mohler, Los Altos, Calif., assignor to Cooper LaserSonics, Santa Clara, Calif.

Filed Feb. 25, 1981, Ser. No. 237,928
Int. Cl.³ H01S 3/08
U.S. Cl. 372—107 16 Claims

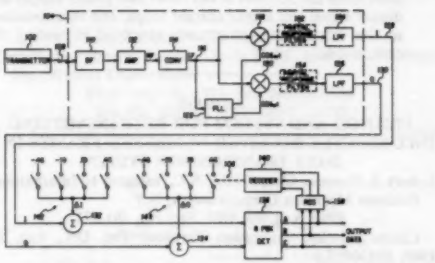


1. An improved laser apparatus of the type which includes an enclosure for containing a lasable gas medium extending along a laser beam path, the enclosure including a window at one end thereof positioned to intercept said laser beam path for passage of laser radiation from said enclosure, a mirror outside said enclosure positioned to intercept said laser beam path, and a mounting structure for supporting said enclosure and said mirror, the improvement comprising a mirror housing assembly which includes a rigid tube having a generally cylindrically shape extending along said laser beam path, one end of said rigid tube including means for receiving and supporting said mirror and the opposite end of said tube extending around said one end of said enclosure having said window to provide support to said one end of said enclosure, mirror tuning means on said mounting structure for supporting said mirror housing assembly for movement to permit positioning of said mirror relative to said enclosure, said opposite end of said rigid tube including a flexible seal between the interior of said rigid tube and the exterior of said enclosure to inhibit contaminants from entering said rigid tube, said flexible seal being dimensioned to permit limited relative movement between said rigid tube of said mirror housing assembly and said enclosure to maintain a seal therebetween when said mirror is repositioned.

4,439,863
PARTIAL RESPONSE SYSTEM WITH SIMPLIFIED DETECTION

John C. Bellamy, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 28, 1980, Ser. No. 210,951
Int. Cl.³ H03K 13/11
U.S. Cl. 375—18 15 Claims



1. A method of processing output signals which result from quadrature channel partial response filtering of input signals, there being a complete set of possible output signals corresponding to a particular set of input signals, all of said signals having a pulse interval associated therewith, the method comprising:

detecing modified output signals in a detection set comparable to said input signal set and generating estimates of input signals based on the modified output signals detected, and

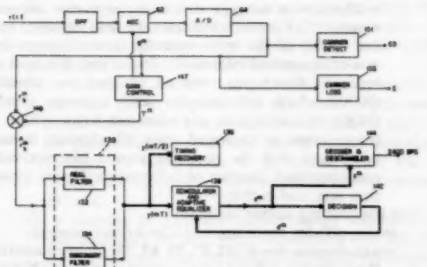
modifying said system output signals so that the set of modified system output signals which are possible in the next interval is a translated subset of said complete set and conforms to said detection set,

thereby deriving estimates of said input signals from said system output signals.

4,439,864
MODEM CIRCUITRY

Shahid U. H. Qureshi, Natick, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Apr. 3, 1980, Ser. No. 136,503
Int. Cl.³ H03G 3/20
U.S. Cl. 375—98 10 Claims



1. Modem receiver apparatus having means for receiving, demodulating, and decoding a modulated carrier signal encoded to represent digital bits, wherein said apparatus includes programmable digital microprocessor circuitry for arithmetic

manipulation of digital values to generate a sequence of received signal values for demodulation in said receiver apparatus, based upon the received modulated carrier signal, wherein said apparatus comprises

a digitally controlled gain element for imposing on said received modulated carrier signal a gain corresponding to gain control signals g, said element being connected to said microprocessor circuitry to receive therefrom said gain control signals g,

an analog-to-digital converter, responsive to said digitally controlled gain element to receive a gain-affected modulated carrier signal therefrom, said converter being connected to said microprocessor circuitry to provide thereto digital samples of said gain-affected received modulated carrier signal for generating said sequence of received signal values for demodulation in said receiver apparatus, and

gain control means in said microprocessor circuitry for storing and executing program instructions to estimate a gain control average level of said samples based upon said gain-affected modulated carrier signal, comparing said average level with a desired level to compute a value representative of the relationship between said average and desired levels, and generating said control signals g based upon said relationship and

wherein said, microprocessor circuitry further comprises carrier detect means for storing a gain value corresponding to the current gain provided by said element, computing a carrier detect average level of said samples, and using said stored gain and said carrier detect average to raise a carrier detect signal when said carrier detect average exceeds a carrier detect threshold.

4,439,865

COPIER SORTER WITH MEMORY AND COUNTER CONTROLLED INLET GATE FOR MANUALLY INSERTED COVERS OR PARTITION SHEETS

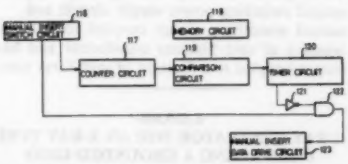
Hideo Kikuchi, Yokohama; Tamaki Kaneko, Fujisawa; Kunio Hibi, Yokohama; Sunao Ikeda, Yokohama, and Yohtaro Kakitani, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jan. 7, 1981, Ser. No. 223,168

Claims priority, application Japan, Sep. 30, 1980, 55-136472

Int. Cl.³ G06F *7/02*; B65H *43/00*, *31/24*; G06M *3/02*

U.S. Cl. 377—8 **1 Claim**



1. A sorter for a copy machine to sort or collate a series of copied sheets delivered in series from said copy machine, said sorter having a row of sheet storing bins and a deflector means adapted to move by steps along said row of bins and return to the position of the first bin when it has reached the position of the bin for the sheet corresponding to the number of sheets to be stored or of the last bin, said sorter including;

a detector (21,116) for sheet reception provided at the inlet of said sorter;

a manual insert means (B) having a manual insert opening for sheets serving as covers or partitions for the copied sheets, said means including a channel extending from said insert opening to said sorter for passage of a sheet, a manual insert gate (40) adapted to close said channel, a transfer roller (42) adapted to transfer the sheets fed into said channel through said manual insert gate to said inlet of the sorter and a driving means adapted to open or close said manual insert gate;

means including a counting device (S1 counter, steps 5,32; 117) serving to provide a count at the end of the copying cycle of the actual number of manually inserted sheets detected at said detector (21, 116) for sheet reception;

means including a memory (DATA register; 118) retaining signals corresponding to the number of sheets to be collated;

a comparsion means (steps 5,40; 119) for providing an identity signal when the number of sheets counted in said counter reaches the figure corresponding to the signals retained by said memory; and

means including timers (steps 5, 48; 7.1-7-4; 120) set at the timer when the identity signal has been produced by said comparison means and reset after the lapse of a predetermined time period;

said timers while they are being set closing said manual insert gate by means of said driving means for said manual insert gate.

4,439,866

ARBITRARY LAYER TOMOGRAPHIC METHOD AND APPARATUS

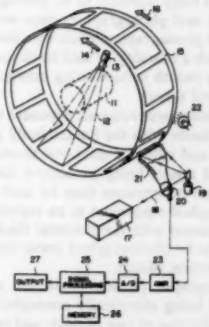
Hisatoyo Kato, and Masamitsu Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 5, 1983, Ser. No. 511,074

Claims priority, application Japan, Jul. 19, 1982, 57-125475

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—19 **10 Claims**



1. An arbitrary layer tomographic method which comprises once storing a plurality of two-dimensional X-ray projection distribution images, which are obtained by exposing an object to X-rays in a plurality of different directions, in positions different from one another in a single stimulable phosphor sheet or respectively in a plurality of stimulable phosphor sheets, scanning said stimulable phosphor sheet or sheets with stimulating rays, photoelectrically reading out the light emitted thereby from said stimulable phosphor sheet or sheets and obtaining electric signals representing the image information of a plurality of said X-ray projection distribution images, processing said electric signals and obtaining the image information representing a tomographic image of an arbitrary tomographic layer of said object.

4,439,867

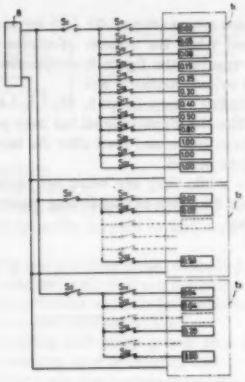
X-RAY PHOTOGRAPH UNIT

Minoru Yoshida, Tokorzawa-Kooporasu-G 308, No. 876-3, Kitaakitsu, Tokorozawa-shi, Saitama, Japan

Continuation of Ser. No. 156,394, Jun. 4, 1980. This application Aug. 23, 1982, Ser. No. 410,426

Int. Cl.³ G03B *41//16*

U.S. Cl. 378—96 **6 Claims**



1. An X-ray photograph unit of the type which controls the X-ray projection on the basis of tube voltage, tube current and exposure time which comprises:

an X-ray tube,

a plurality of photography portion switches structured so as to automatically set said tube voltage and tube current to predetermined values corresponding to selected portions of the human body to be photographed,

a plurality of thickness switches structured so as to set automatically the exposure time to correspond to the thickness of human body portions to be photographed in combination with said photograph portion switches,

each of said photograph portion switches being connected in series with a plurality of said thickness switches and each thickness switch in turn being connected in series to first and second timers,

said first timers providing an exposure time pre-determined in accordance with the human body portion to be photographed and with the thickness thereof,

said second timers being protective timers to provide the upper limit of exposure time for each body portion to be photographed equivalent to an exposure time determined in accordance with the maximal thickness for each body portion to be photographed under control of said photograph portion switch,

said photograph portion switches and said thickness switches being electrically connected to said X-ray tube so the selection of one of each said switches alone makes it possible to carry out an X-ray photography projection.

4,439,868

MEDICAL X-RAY RADIATION POWER SUPPLY APPARATUS

Takao Makino, Hikone, and Toshiaki Ikeda, Yahata, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 17, 1983, Ser. No. 476,277

Claims priority, application Japan, Mar. 18, 1982, 57-38966[U]

Int. Cl.³ H05G *1/34*

U.S. Cl. 378—112 **4 Claims**

1. A medical X-ray radiation power supply apparatus comprising:

a high voltage generation network comprising:

a smoothing power supply circuit for rectifying commercially available power;

a first switching power supply circuit coupled to an output of said smoothing power supply circuit, said switching power supply circuit further having a switching input;

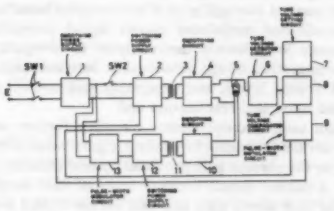
a high voltage transformer with primary and secondary windings, said primary winding be coupled to an output of said first switching power supply circuit;

a first smoothing circuit coupled to said secondary winding and having its output coupled to an X-ray tube;

an X-ray tube voltage detector coupled to said secondary windings for detecting the magnitude of the X-ray tube voltage;

an X-ray tube setting circuit for setting an X-ray tube reference voltage;

a comparator circuit for comparing said detected X-ray tube



voltage with said reference voltage and for generating an output indicative of the comparison; and

a first pulse-width modulator circuit which generates a pulse-width modulated pulse in response to the output of said comparator circuit, said pulse-width modulated pulse being supplied to said switching input of said first switch power supply circuit to control said tube voltage of said X-ray tube;

a filament power supply network comprising;

a second pulse-width modulator circuit coupled to said output of said smoothing power supply circuit;

a second switching power supply circuit coupled to an output of said second pulse-width modulator circuit;

a filament transformer having a primary and secondary windings, said primary winding being coupled to said second switching power supply circuit; and

a second smoothing circuit coupled to said secondary winding of said filament transformer and having its output coupled to a filament of said X-ray tube.

4,439,869

X-RAY GENERATOR FOR AN X-RAY TUBE COMPRISING A GROUNDED GRID

Bernd Hermeyer, Schenefeld; Heinz Mester, Hamburg, and Hans Negle, Nabe, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,930

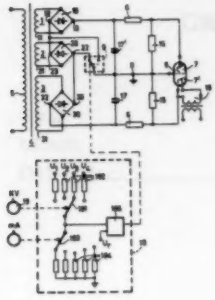
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3135061

Int. Cl.³ H05G *1/12, 1/32*

U.S. Cl. 378—113 **5 Claims**

1. An X-ray generator for an X-ray tube comprising a grounded grid which is situated between the anode and the cathode thereof, said X-ray generator comprising a series connection of high voltage generators which are to be connected to the anode and the cathode of the X-ray tube in order to generate a direct voltage on the X-ray tube, and also comprising means for changing the ratio of the anode voltage and the cathode voltage, characterized in that the series connection consists of at least three high voltage generators (1, 2, 3), there being provided a high voltage switching device (9) whereby an

output junction of two interconnected high voltage generators can be connected to ground, the high voltage switching device (9) being switchable in dependence of the adjusted value of the tube voltage and/or the tube current on order to ensure that



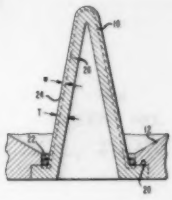
the ratio of the anode voltage and the cathode voltage is smaller in the case of low values of the tube voltage than in the case of high values of the tube voltage and that a given value of the cathode voltage is not exceeded.

4,439,870

X-RAY SOURCE AND METHOD OF MAKING SAME

Martin E. Poulsen, New Providence; Frederick Vratny, Berkeley Heights, and Alfred Zacharias, Plainfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1981, Ser. No. 334,479
Int. Cl.[3] H01J *35/08*
U.S. Cl. 378—143 9 Claims



1. In combination in an X-ray system,
a target comprising an X-ray-emissive material for producing X-rays in response to electron bombardment of surface portions of said target,
and means for directing cooling water along other surface portions of said target,
wherein the improvement comprises a limited-depth hydrogen-barrier layer, comprising said X-ray-emissive material as a constituent, formed within said target extending from said other surface portions.

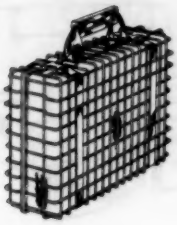
DESIGN PATENTS

GRANTED MAR. 27, 1984

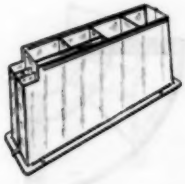
ERRATA

For CLASS	See PATENT NO.
D15–007	273,178

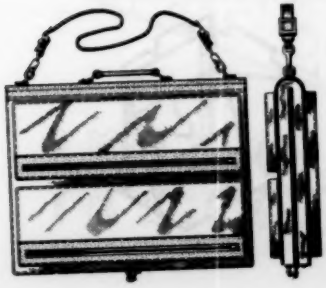
273,149
CARRYING CASE
Bruce Fifield, Bank Village St., New Ipswich, N.H. 03071
Filed Feb. 22, 1982, Ser. No. 350,728
U.S. Cl. D3—30.1



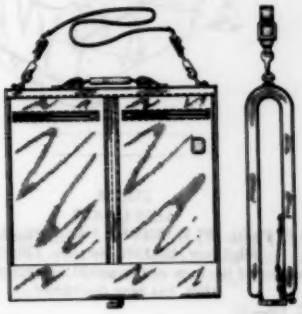
273,150
AIRCRAFT CONSOLE
David L. Benson, 7474 Carmel La., Grand Ledge, Mich. 48837
Filed Jun. 19, 1981, Ser. No. 275,591
U.S. Cl. D3—40



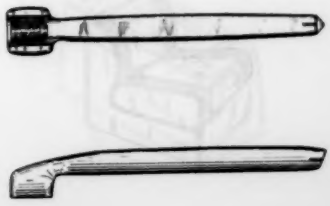
273,151
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,490
U.S. Cl. D3—71



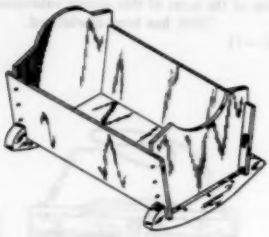
273,152
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,529
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
U.S. Cl. D3—71



273,153
TOOTHBRUSH
Eugene C. Wagner, 3424 Kingsbridge Ave., Bronx, N.Y. 10463
Filed Jun. 7, 1982, Ser. No. 385,926
U.S. Cl. D4—28



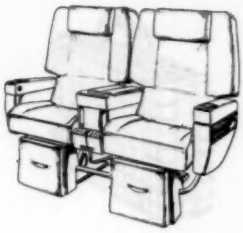
273,154
CRADLE
José C. Almela, 62 St. Charles Rd., Greenfield Park, Quebec, Canada
Filed Dec. 31, 1981, Ser. No. 336,424
Claims priority, application Canada, Oct. 20, 1981, 23-10-81-13
U.S. Cl. D6—15



273,155
ARM CHAIR
Donald C. Petitt, 207 W. 86th St., New York, N.Y. 10024
Filed Nov. 10, 1981, Ser. No. 320,038
The portion of the term of this patent subsequent to Feb. 28, 1998, has been disclaimed.
U.S. Cl. D6—31

273,156
ARMLESS SOFA
Barbara Dubbin, and Jackie Caputo, both of Miami, Fla., assignors to Casa Bella Imports, Inc., Miami, Fla.
Filed Jan. 8, 1982, Ser. No. 338,128
U.S. Cl. D6—47

273,157
AIRCRAFT SEAT
Lucien Staub, Paray-Vieille Poste, France, assignor to La Compagnie Nationale Air France, Paris, France
Filed Sep. 14, 1981, Ser. No. 302,259
Claims priority, application France, Mar. 16, 1981, 81 0966
U.S. Cl. D6—48



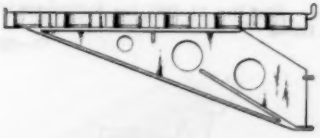
273,158
OPEN CURVED SOFA
Barbara Dubbin, and Jackie Caputo, both of Miami, Fla., assignors to Casa Bella Imports, Inc., Miami, Fla.
Filed Jan. 8, 1982, Ser. No. 338,126
U.S. Cl. D6—61

273,159
GROCERY BAG HOLDING RACK
Gerhard Adamson, 60 Blue Ridge Dr., Vernon, Conn. 06066, and Earl W. Voorhees, Jr., 903 Manor Dr., Box 363, Dublin, Pa. 18917
Filed Dec. 10, 1981, Ser. No. 329,607
U.S. Cl. D6—85

273,160
COMBINED HOLDER AND DISPENSER FOR TISSUE PAPER ROLLS
Ralph E. Moreland, 1401 NE. Englewood Rd., Kansas City, Mich. 64118
Filed Sep. 15, 1981, Ser. No. 302,637
U.S. Cl. D6—97

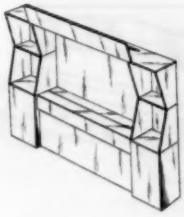
273,161
TOWEL RACK
Lee E. Weber, 1670 Molino Ave., Long Beach, Calif. 90804
Filed Dec. 10, 1982, Ser. No. 448,844
U.S. Cl. D6—100

273,162
RACK OR SIMILAR ARTICLE
Lance K. Halverson, 7301 - 27th Ave. NW., Seattle, Wash. 98117
Continuation-in-part of Ser. No. 65,905, Aug. 13, 1979, abandoned. This application Feb. 7, 1980, Ser. No. 119,604
U.S. Cl. D6—125

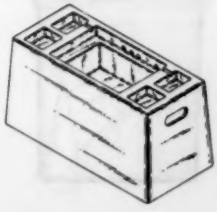


273,163
PUPIL'DESK
Matti Halme, Harjuvilta 18 A 11, SF-02110 Espoo 10, Finland
Filed Mar. 23, 1981, Ser. No. 246,737
Claims priority, application Finland, Oct. 1, 1980, 712/80
U.S. Cl. D6—181

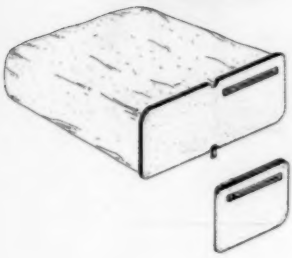
273,164
FOLDABLE DISPLAY STAND OR THE LIKE
Mark A. Matthews, 1706 Park, Balboa Island, Calif. 92662
Filed Nov. 9, 1981, Ser. No. 319,318
U.S. Cl. D6—186



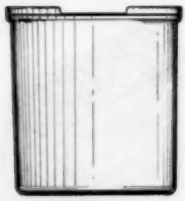
273,165
ELECTRONIC GAME STAND
Steven Sternberg, 24 Kristi La., Lake Grove, N.Y. 11755
Filed Aug. 28, 1981, Ser. No. 297,136
U.S. Cl. D6—188



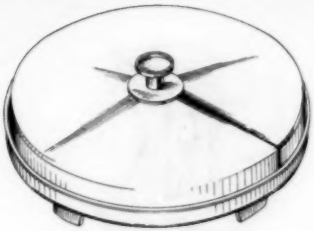
273,166
INFLATABLE FOLDABLE CUSHION
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004
Filed Nov. 5, 1981, Ser. No. 318,639
U.S. Cl. D6—201

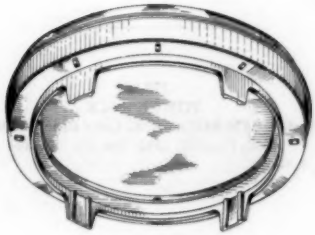


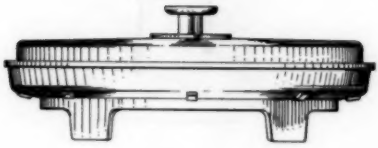
273,167
CANISTER
Arthur R. Carlson, East Malvern, Australia, assignor to Brian Davis & Company Proprietary Limited, Victoria, Australia
Filed Nov. 12, 1981, Ser. No. 320,296
Claims priority, application Australia, Oct. 15, 1981, 85,496
U.S. Cl. D7—79



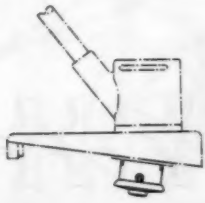
273,168
MICROWAVE PIZZA MAKER UTENSIL
Robert F. Bowen, Burlington; Thomas J. Martel, North Reading, and Wayne I. Pollack, Arlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Nov. 16, 1981, Ser. No. 321,944
U.S. Cl. D7—354



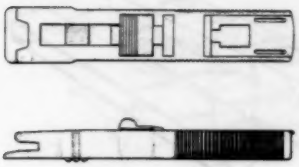




273,169
CUTTING HEAD OF A WEED CUTTER OF THE TYPE USING A ROTATING CUTTING STRING
Jon A. Rahe, Mission Viejo, and John Motruk, Whittier, both of Calif., assignors to Hawaiian Motor Company, Long Beach, Calif.
Filed Dec. 11, 1981, Ser. No. 329,895
U.S. Cl. D8—8



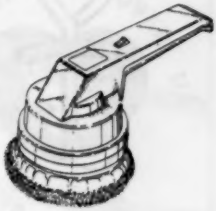
273,170
PAPER CLIP DRIVER AND APPLICATOR
Hisao Sato, Dai-ni Hikari-so, 10 Toyotama Minami 3-chome, Nerima-ku, Tokyo, Japan
Filed Oct. 6, 1981, Ser. No. 309,087
U.S. Cl. D8—49



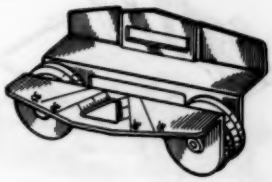
273,171
DISPENSING DEVICE FOR FASTENERS
Arnold R. Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Oct. 28, 1981, Ser. No. 315,830
U.S. Cl. D8—49

273,172
THREAD NIPPER OR THE LIKE
Masami Yamagishi, Tokyo, Japan, assignor to Sanwa Cutlery Ltd., Tokyo, Japan
Filed Sep. 2, 1981, Ser. No. 298,731
U.S. Cl. D8—57

273,173
CAR POLISHER
Tit-Wing Poon, 12F Lam Uk Village, Chaiwan, Hong Kong
Filed Jun. 22, 1981, Ser. No. 276,313
Claims priority, application United Kingdom, Mar. 9, 1981, 999316
U.S. Cl. D8—62



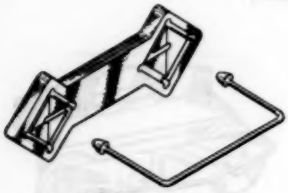
273,174
SAW SHARPENING GUIDE
Cornelis J. M. Beerens, 40-42 Berkshire Rd., North Sunshine, Victoria, Australia
Filed Mar. 4, 1981, Ser. No. 240,464
Claims priority, application Australia, Oct. 10, 1980, 82277
U.S. Cl. D8—71



273,175
WALL AND CEILING HOOK TOOL HEAD, FOR USE IN FIGHTING FIRES
Theodore Ziaylek, Jr., P.O. Box 337, Yardley, Pa. 19067
Filed Feb. 26, 1982, Ser. No. 352,617
U.S. Cl. D8—81

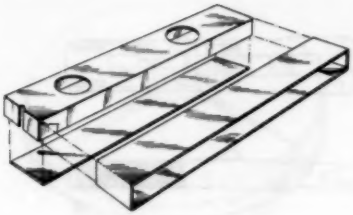
273,176
TIE DOWN DEVICE
Thomas R. Abbott, 1266 Richard St., Orange, Calif. 92669
Filed May 26, 1981, Ser. No. 267,226
U.S. Cl. D8—356

273,177
TAMPER-PROOF FASTENING DEVICE FOR TAGS AND THE LIKE
John K. Tchernashoff, Fort Payne, Ala., assignor to Tchernashoff Associates, Inc., Fort Payne, Ala.
Division of Ser. No. 214,328, Dec. 8, 1980. This application Jun. 27, 1983, Ser. No. 508,479
U.S. Cl. D8—382

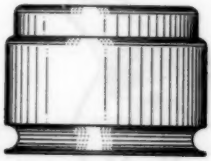


273,178
PACKAGED AIR INFLATOR SET
Jerald V. Dunlap, Pacific Palisades, Calif., assignor to M-D & Co., Mammoth Lakes, Calif.
Filed Feb. 23, 1981, Ser. No. 237,515
U.S. Cl. D15—7

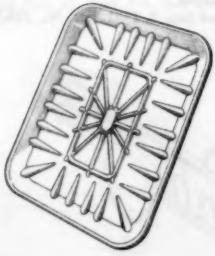
273,179
PACKAGING CONTAINER FOR A RIBBON CARTRIDGE
Sydney Shore, 38-40 48th St., Long Island City, N.Y. 11004
Filed Feb. 10, 1982, Ser. No. 347,601
U.S. Cl. D9—346



273,180
COSMETIC JAR
John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417
Filed Jul. 13, 1979, Ser. No. 57,293
U.S. Cl. D9—352



273,181
FOOD PACKAGING TRAY
George B. Braddon, 26 Maple Ave., Holcomb, N.Y. 14469
Filed Jul. 30, 1981, Ser. No. 288,666
U.S. Cl. D9—425



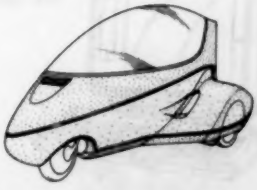
273,182
TEA POT SIMULATING THIMBLE
William B. Shane, and Claudia A. Shane, both of 2845 N. Albany, Chicago, Ill. 60618
Filed Feb. 2, 1982, Ser. No. 339,821
U.S. Cl. D11—157

273,183
COFFEE POT SIMULATING THIMBLE
William B. Shane, and Claudia A. Shane, both of 2845 N. Albany, Chicago, Ill. 60618
Filed Jan. 25, 1982, Ser. No. 342,212
U.S. Cl. D11—157

273,184
FLAG OR SIMILAR ARTICLE
Paul E. Wabeke, P.O. Box #132, Holland, Mich. 49423
Filed May 27, 1981, Ser. No. 265,051
U.S. Cl. D11—173

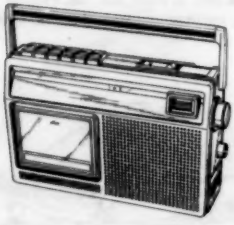
273,185
SNOWMOBILE
Atsushi Ishiyama, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Oct. 8, 1980, Ser. No. 194,958
Claims priority, application Japan, Apr. 12, 1980, 55-14363
U.S. Cl. D12—7

273,186
VEHICLE
Richard P. Bruning, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 21, 1981, Ser. No. 332,478
U.S. Cl. D12—85

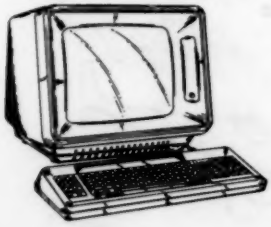


273,187
LOCKABLE QUICK FOOT FOR VEHICLE RACKS
Jan-Erik Brorsson, Toarpedal, S-516 00 Dalsjofors, Sweden
Filed May 22, 1981, Ser. No. 266,606
U.S. Cl. D12—157

273,188
COMBINED RADIO AND CASSETTE TAPE RECORDER
Katsutoshi Kido, Kyoto, and Satoru Usami, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Oct. 14, 1981, Ser. No. 311,472
Claims priority, application Japan, Apr. 20, 1981, 56-17011
U.S. Cl. D14—5

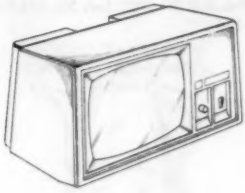


273,189
DISPLAY TERMINAL
James L. Korzik, Palm Harbor; Thomas Wissman; Richard Anderson, both of Largo, and Jorge Suarez, Seminole, all of Fla., assignors to Paradyne Corporation, Largo, Fla.
Filed Aug. 12, 1981, Ser. No. 292,148
U.S. Cl. D14—106



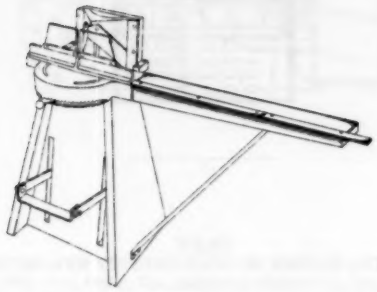
273,190
COMPUTER
Yoshihisa Ohie, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 20, 1981, Ser. No. 294,424
Claims priority, application Japan, Feb. 24, 1981, 56-7575
U.S. Cl. D14—106

273,191
COMPUTER DATA DISPLAY MONITOR
Terrell A. Oyama, San Jose, and Loren D. Stirling, Pleasanton, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Nov. 13, 1981, Ser. No. 321,235
U.S. Cl. D14—113



273,192
CARTRIDGE FOR MAGNETIC DISC
Shigeru Yoshida, Chichibu, Japan, assignor to Canon Kabushiki Kaisha and Canon Denshi Kabushiki Kaisha, both of Tokyo, Japan
Filed Jan. 30, 1981, Ser. No. 230,351
Claims priority, application Japan, Aug. 22, 1980, 55-34316
U.S. Cl. D14—114

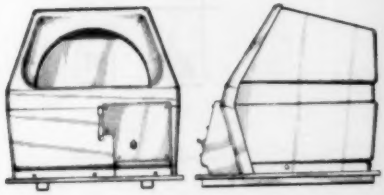
273,193
GAGE BAR FOR MITER CUTTING MACHINE
John K. Stowe, Manchester, Conn., assignor to Perimet, Inc., Chester, Conn.
Filed Mar. 2, 1981, Ser. No. 239,615
U.S. Cl. D15—133



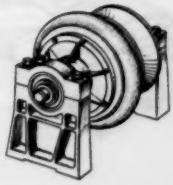
273,194
TOOL FOR CUTTING THE INSIDE OF PLASTIC PIPES
Harold House, 2709 Cambridge Cir., Rosenberg, Tex. 77471
Filed Dec. 4, 1981, Ser. No. 327,715
U.S. Cl. D15—139

273,195
POWER TOOL TABLE
Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Baisch, Palatine, all of Ill., assignors to Hirsh Company, Skokie, Ill.
Filed Aug. 14, 1981, Ser. No. 293,006
U.S. Cl. D15—141

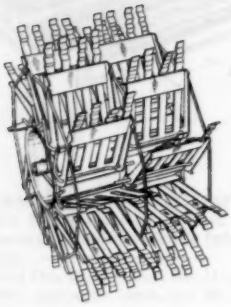
273,196
FEEDER HOUSING
Lee F. Radtke, Lake Zurich, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.
Filed Oct. 8, 1981, Ser. No. 309,706
U.S. Cl. D15—147



273,197
VARIABLE SPEED BELT DRIVE
Robert O. Huff; Edward F. Krome, Jr., and Gebus Barnsfather, all of Columbus, Ind., assignors to Reliance Electric Company, Columbus, Ind.
Filed Mar. 16, 1981, Ser. No. 244,210
U.S. Cl. D15—148



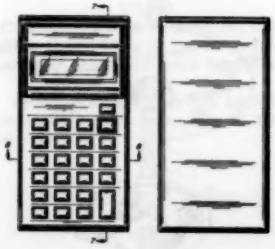
273,198
ROTARY ELEMENT OF PLASTERING MACHINE
Anne Marie Y. Croixyveuve Daignas, Villa La Perle, 11 Boulevard Edouard 1, II Nice, France
Filed Aug. 13, 1980, Ser. No. 177,616
U.S. Cl. D15—199



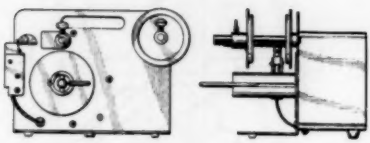
273,199
CALCULATOR WITH PRINTER
Masaji Sawada, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 24, 1982, Ser. No. 361,496
Claims priority, application Japan, Sep. 30, 1981, 56-43796
U.S. Cl. D18—7

273,200
ELECTRONIC CALCULATOR WITH SOLAR BATTERIES
Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1981, Ser. No. 410,468
Claims priority, application Japan, Jul. 3, 1981, 56-29784
U.S. Cl. D18—7

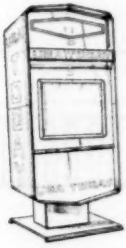
273,201
ELECTRONIC CALCULATOR
Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1981, Ser. No. 410,469
Claims priority, application Japan, Jul. 3, 1981, 56-29783
U.S. Cl. D18—7



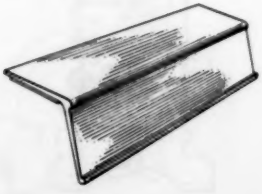
273,202
LABEL DISPENSER
Allen H. Oglander, St. Louis County, and Richard E. Shannon, Rocky Mount, both of Mo., assignors to Commercial Mailing Accessories, Inc., St. Louis, Mo.
Filed Sep. 13, 1982, Ser. No. 417,413
U.S. Cl. D18—19



273,203
NEWSPAPER VENDING RACK OR SIMILAR ARTICLE
Fred M. Gore, Dallas, Tex., assignor to Gannett Co., Inc., Rochester, N.Y.
Filed May 12, 1982, Ser. No. 377,440
U.S. Cl. D20—6



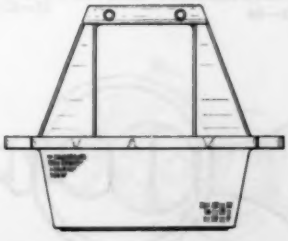
273,204
DISPLAY SIGN STRIP
Robert L. Baker, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Sep. 18, 1981, Ser. No. 303,351
U.S. Cl. D20—44



273,205
TOY BAR MAGNET
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 17, 1981, Ser. No. 331,651
U.S. Cl. D21—59

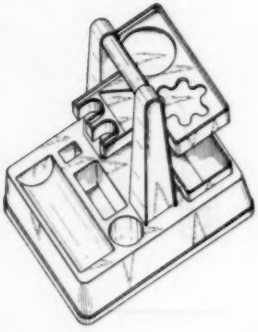
273,206
TOY HORSESHOE MAGNET
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 17, 1981, Ser. No. 331,653
U.S. Cl. D21—59

273,207
TOY CARRIER
W. Porter Clanton, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 21, 1981, Ser. No. 332,450
U.S. Cl. D21—59

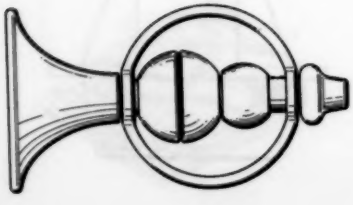


273,208
TOY PICTURE FRAME OR SIMILAR ARTICLE
A. Edward Fogarty, and Bonnie R. Fogarty, both of 3513 School Ave., Sarasota, Fla. 33579
Filed Jan. 15, 1982, Ser. No. 339,710
U.S. Cl. D21—59

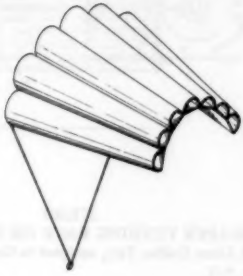
273,209
TOY CARRIER
David J. Ciganko, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,164
U.S. Cl. D21—59



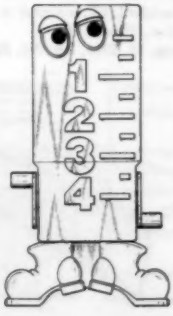
273,210
TOY TRUMPET
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, and Kuniko Sugita, both of Tokyo, all of Japan, assignors to Combi, Co., Ltd., Tokyo, Japan
Filed May 18, 1981, Ser. No. 265,111
Claims priority, application Japan, Jan. 29, 1981, 56-3071
U.S. Cl. D21—64



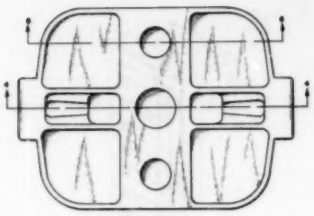
273,211
KITE
Paolo Ferrari, Stanmore, England, assignor to Zether Limited, London, England
Filed Oct. 26, 1981, Ser. No. 315,011
Claims priority, application United Kingdom, Apr. 24, 1981, 1000167
U.S. Cl. D21—88



273,212
TOY TAPE MEASURE
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,741
U.S. Cl. D21—120

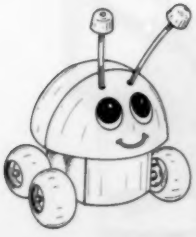


273,213
TOY TRAY
Carl J. Simmons, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 28, 1982, Ser. No. 343,409
U.S. Cl. D21—121



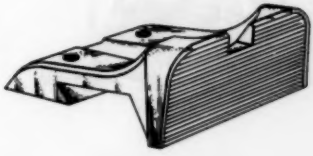
273,214
TOY DISH DRAINER
Augusto Argandona, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 5, 1982, Ser. No. 346,107
U.S. Cl. D21—121

273,215
ACTION PULL TOY
John T. Sahler, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Feb. 4, 1982, Ser. No. 345,626
U.S. Cl. D21—150

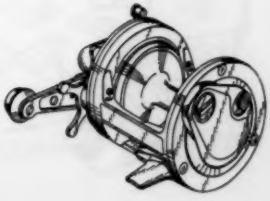


273,216
MULTI-PURPOSE DEFENSE BATON
Harold S. Sinrod, 10110 New London Dr., Potomac, Md. 20854
Filed Jun. 2, 1982, Ser. No. 384,207
U.S. Cl. D22—1

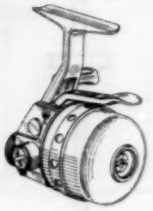
273,217
GUN SIGHT
Armand Swenson, P.O. Box 606, Fallbrook, Calif. 92028
Filed Apr. 5, 1982, Ser. No. 365,181
U.S. Cl. D22—8



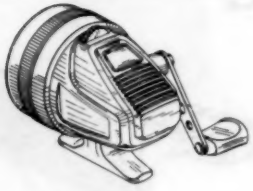
273,218
REEL FOR FISHING
Takashi Atobe, Higashikurume, and Kanji Iinuma, Musashino, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jun. 15, 1982, Ser. No. 388,708
Claims priority, application Japan, Dec. 29, 1981, 56-58708
U.S. Cl. D22—25



273,219
REEL FOR FISHING
Kanji Iinuma, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 19, 1982, Ser. No. 399,352
Claims priority, application Japan, Jan. 30, 1982, 57-3602
U.S. Cl. D22—25



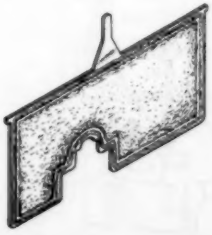
273,220
REEL FOR FISHING
Kanji Iinuma, Tokyo, and Hideo Nakamura, Sakura, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 19, 1982, Ser. No. 399,762
Claims priority, application Japan, Jan. 30, 1982, 57-3600
U.S. Cl. D22—25



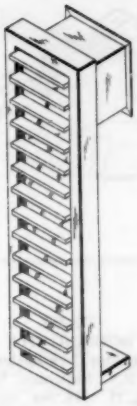
273,221
REEL FOR FISHING
Kanji Iinuma, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 19, 1982, Ser. No. 399,763
Claims priority, application Japan, Jan. 30, 1982, 57-3601
U.S. Cl. D22—25

273,222
FISH HANDLING DEVICE
Jeffrey Niemann, 316 Lexington Ave., Fort Smith, Ark. 72901
Continuation-in-part of Ser. No. 36,876, May 7, 1979, Pat. No. Des. 258,980. This application Dec. 15, 1980, Ser. No. 216,188
U.S. Cl. D22—31

273,223
FILTER
Tibor Horvath, Brooklyn, N.Y., assignor to Lazere Financial Corporation, New York, N.Y.
Filed Oct. 5, 1981, Ser. No. 308,934
U.S. Cl. D23—4

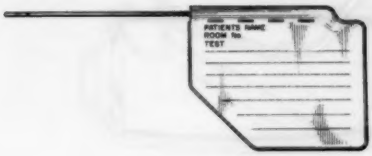


273,224
SOLAR PANEL
Harold King, 3925 Tiverton Rd., Randallstown, Md. 21133
Continuation-in-part of Ser. No. 154,430, May 29, 1980, Pat. No. Des. 261,030. This application Jul. 9, 1981, Ser. No. 281,662
U.S. Cl. D23—72

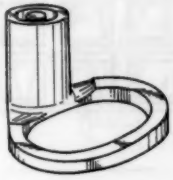


273,225
AIR FRESHENER HOUSING
Richard C. J. Palson, Medfield, Mass., assignor to Woodlets, Inc., Buffalo, N.Y.
Filed Aug. 24, 1981, Ser. No. 295,866
U.S. Cl. D23—150

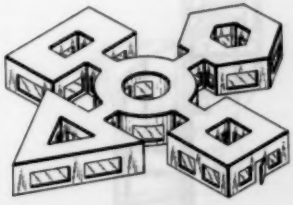
273,226
SINGLE USE CATHETER DEVICE
Edwin H. Riedell, 412 W. Hermosa Dr., Fullerton, Calif. 92635
Filed Jan. 28, 1982, Ser. No. 343,498
U.S. Cl. D24—54



273,227
PULL RING PORT CAP FOR A MEDICAL FLUID CONTAINER
Kenneth E. Wilkinson, Round Lake, and Thomas W. Balistreri, Lake Bluff, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 24, 1981, Ser. No. 295,402
U.S. Cl. D24—48

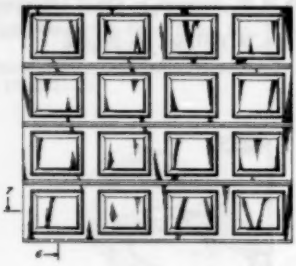


273,228
BUILDING STRUCTURE
Sammy Cotton, 1314 W. 69th St., Los Angeles, Calif. 90044
Filed Jan. 8, 1982, Ser. No. 337,974
U.S. Cl. D25—1



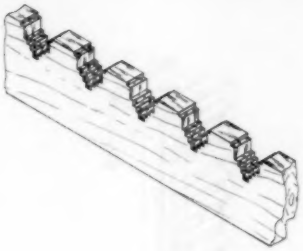
273,229
SWIMMING POOL
Michel Lippe, 173 St-Exupery, Mont St-Hilaire, Quebec; Claude Lippe, 1455 De Castelno, St-Hyacinthe, Quebec, and Jacques Lippe, 1805 Becancour, Laval, Quebec, all of Canada
Filed Dec. 9, 1981, Ser. No. 328,856
U.S. Cl. D25—2

273,230
GARAGE DOOR
Robert A. Martinez, 4127 S. Wolff St., Denver, Colo. 80236, and Robert D. Bohnas, Denver, Colo., assignors to Robert A. Martinez, Denver, Colo.
Filed Dec. 18, 1980, Ser. No. 217,672
U.S. Cl. D25—49

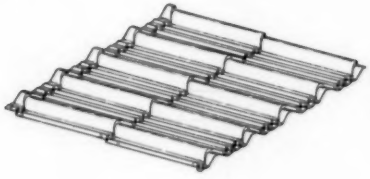


273,231
SPIRAL STAIRWAY
Abraham Suckno, 289 Friar La., Mountainside, N.J. 07092
Filed Sep. 8, 1981, Ser. No. 300,245
U.S. Cl. D25—62

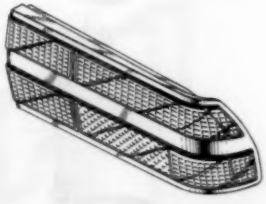
273,232
DECORATIVE MOLDING STRIP
James A. Roberts, 26 Renpass Ave., Harahan, La. 70123
Filed Aug. 10, 1981, Ser. No. 291,638
U.S. Cl. D25—79



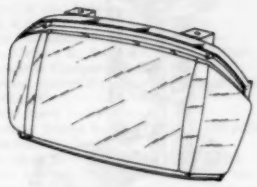
273,233
ROOFING TILE
Robert B. Norgate, Hamilton, New Zealand, assignor to Hunter Douglas Industries, B.V., Rotterdam, Netherlands
Filed Aug. 21, 1981, Ser. No. 295,016
U.S. Cl. D25—92



273,234
TAIL LIGHT FOR AUTOMOBILE
Claus Luthe, Munich; Manfred Rennen, Ingolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany
Filed Mar. 27, 1981, Ser. No. 248,363
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, M4 12 271
U.S. Cl. D26—35

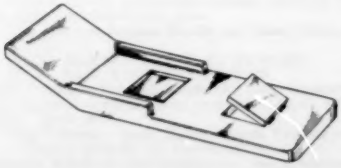


273,235
MOTORCYCLE HEADLIGHT
Tetsuo Ogishima, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 16, 1981, Ser. No. 321,397
Claims priority, application Japan, May 18, 1981, 56-21178
U.S. Cl. D26—35



273,236
HEADLIGHT COVER
Francois Bailly, Neuilly sur Seine, France, assignor to Equipements Automobiles Marchal, Issy-les-Moulineaux, France
Filed Jun. 17, 1980, Ser. No. 160,299
Claims priority, application France, Oct. 1, 1979, 77915
U.S. Cl. D26—139

273,237
DEVICE FOR SORTING TOBACCO LEAVES AND THE LIKE
Pete A. Tippett, 1209 Mt. Hermon Rd., Salisbury, Md. 21801
Filed Nov. 30, 1981, Ser. No. 326,122
U.S. Cl. D27—51

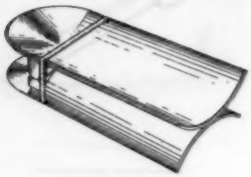


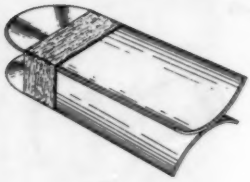
273,238
EYE MAKEUP APPLICATOR
Albert K. Taylor, South Haven, Miss., and Robert L. Baumgartner, Memphis, Tenn., assignors to Plough, Inc., Memphis, Tenn.
Filed Aug. 27, 1982, Ser. No. 412,352
U.S. Cl. D28—7

273,239
BLOW DRYER
Frank Antonacci, 276 Indian Trail, Mountainside, N.J. 07092, and Ronald Carluccio, 242 Washington St., Berkeley Heights, N.J. 07922
Filed Oct. 5, 1981, Ser. No. 308,528
U.S. Cl. D28—13

273,240
BLOW DRYER
Frank Antonacci, 276 Indian Trail, Mountainside, N.J. 07092, and Ronald Carluccio, 242 Washington St., Berkeley Heights, N.J. 07922
Filed Oct. 5, 1981, Ser. No. 308,834
U.S. Cl. D28—13

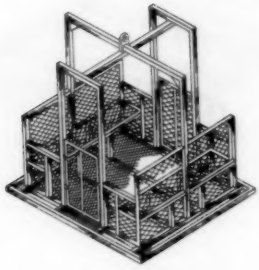
273,241
HAIR PIN
Nicole Bisson, Laval, Canada, assignor to Salon Nicole Bisson Inc., Blainger, Canada
Filed Mar. 3, 1982, Ser. No. 354,224
Claims priority, application Canada, Jan. 27, 1982, 27-01-82-1
U.S. Cl. D28—40





273,242
MOBILE MAINTENANCE CART
Dale T. Mazza, Frederick County; Harold Ruckman, and Glen E. Tomblin, both of Winchester, all of Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Nov. 9, 1981, Ser. No. 319,667
U.S. Cl. D34—21

273,243
AIR RESCUE CARRIER
Ysauro B. Lujan, Jr., 5645 Holiday Dr., Stockton, Calif. 95207
Filed Jan. 18, 1982, Ser. No. 340,425
U.S. Cl. D34—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Gerrard & Co.: *See*—
Simich, Emil, 4,438,689, Cl. 100-25.000.

A. O. Smith Harvestore Products, Inc.: *See*—
Nelson, Delmer R., 4,438,607, Cl. 52-126.100.

A. W. Chesterton Company: *See*—
Rockwood, Robert E.; and Antkowiak, Richard P., 4,439,096, Cl. 415-131.000.

AB Dentatus: *See*—
Edwardson, Svante R., 4,439,150, Cl. 433-56.000.

Abbott Laboratories: *See*—
Larkin, Mark E., 4,439,193, Cl. 604-411.000.

Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, to Bridgestone Tire Company Limited. Pneumatic tire for off-road vehicles. 4,438,796, Cl. 152-353.00R.

Abeta, Sadaharu: *See*—
Harada, Naoki; and Abeta, Sadaharu, 4,439,205, Cl. 8-527.000.

Abraham, Nedumparambil A.: *See*—
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.

Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I. Process for injection molding of thermoplastics and split mold for effecting same. 4,439,390, Cl. 264-297.200.

Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, to International Business Machines Corporation. Solder/braze-stop composition. 4,439,250, Cl. 148-23.000.

Ackerson, Arthur T.: *See*—
Jones, Johnnie; Einig, Joseph A.; and Ackerson, Arthur T., 4,438,596, Cl. 49-463.000.

Acme Resin Corporation: *See*—
Johnson, Calvin K.; and Armbruster, David R., 4,439,489, Cl. 428-404.000.

Acton Research Corporation: *See*—
Flint, Bruce K., 4,439,259, Cl. 156-245.000.

Adamson, Robert S.: *See*—
Orlowski, Gerald J.; and Adamson, Robert S., 4,439,101, Cl. 414-126.000.

Adelski, Hans-Joachim; and Pflaugner, Josef, to Siemens Aktiengesellschaft. Permanent magnet excited rotor for a synchronous machine. 4,439,704, Cl. 310-211.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Lundquist, Ingemar H., 4,439,185, Cl. 604-97.000.

Aeroquip Corporation: *See*—
Allread, Alan R., 4,438,779, Cl. 137-614.060.

AG fur Turautomaten: *See*—
Bunzl, Helmut H., 4,438,594, Cl. 49-177.000.

Agrawal, Bhagwati P.: *See*—
Shenoi, Kishan; and Agrawal, Bhagwati P., 4,439,756, Cl. 340-347.0AD.

Agrico Chemical Company: *See*—
Parks, Kenneth L., 4,439,407, Cl. 423-317.000.

Ahuja, Meena S.: *See*—
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., 4,439,593, Cl. 528-45.000.

Aiena, Peter P.; and Schulz, Eduard, to NCR Corporation. Non-volatile memory system for intelligent terminals. 4,439,837, Cl. 364-900.000.

Aiga, Toshiro; and Maeda, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Water soluble cores and method for manufacturing cast rotor provided with ventilation ducts utilizing the core. 4,438,804, Cl. 164-522.000.

Air Products and Chemicals, Inc.: *See*—
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.
Timberlake, George A., Jr., 4,438,792, Cl. 141-95.000.

Airwick Industries, Inc.: *See*—
Hennart, Claude; and Courdent, Jacques, 4,439,415, Cl. 424-16.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,438,739, Cl. 123-90.550.
Iwasaki, Shinichiro, 4,438,751, Cl. 123-606.000.
Kagata, Tooru, 4,438,836, Cl. 192-36.000.

Ajisaka, Yasuo, to Kabushiki Kaisha Orii Jidoki Seisakusho. Apparatus for unloading workpiece from press. 4,439,092, Cl. 414-752.000.

Akado, Hajime: *See*—
Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.

Akamatsu, Yoshiyuki; and Shimogawara, Jun, to Nippon Electric Co., Ltd. Sheet feeding device. 4,438,915, Cl. 271-9.000.

Akasaka, Shozo: *See*—
Kikuzawa, Kenji; and Akasaka, Shozo, 4,439,059, Cl. 405-25.000.

Akashi, Goro: *See*—
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,795, Cl. 360-131.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,796, Cl. 360-131.000.

Akerberg, Denis W., to Quaker Oats Company, The. Catalyst system for furan resins. 4,439,348, Cl. 252-426.000.

Akiyama, Katsuyuki: *See*—
Yamabe, Masaaki; and Akiyama, Katsuyuki, 4,439,217, Cl. 55-158.000.

Aktiengesellschaft Adolph Saurer AG: *See*—
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.

Akutsu, Masao: *See*—
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.

Akzona Incorporated: *See*—
Zengel, Hans; and Bergfeld, Manfred, 4,439,370, Cl. 260-453.00P.

Albanese, James J., to United Industries Corporation. Aerosol preparation. 4,439,342, Cl. 252-305.000.

Albanese, James J., to United Industries Corporation. Aerosol preparation. 4,439,343, Cl. 252-305.000.

Albanese, James J., to United Industries Corporation. Water dispersions. 4,439,344, Cl. 252-312.000.

Albany International Corp.: *See*—
Curry, Thomas H., 4,439,273, Cl. 162-358.000.
Johnson, Cary P.; and Sokaris, Jerry G., 4,439,481, Cl. 428-235.000.

Albert-Frankenthal AG: *See*—
Maier, Peter; and Niedermaier, Arnold, 4,438,695, Cl. 101-153.000.

Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, to Bayer Aktiengesellschaft. Process for the preparation of copolymers of styrene and/or its derivatives. 4,439,589, Cl. 526-209.000.

Albizzati, Enrico: *See*—
Cecchin, Giuliano; and Albizzati, Enrico, 4,439,540, Cl. 502-125.000.

Alcolite Products Corp.: *See*—
Carroll, Glenn G.; and Frank, Joseph C., 4,438,960, Cl. 285-367.000.

Aldikacti, Hulki: *See*—
Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., 4,438,971, Cl. 296-191.000.

Alfa-Laval Agrar GmbH: *See*—
Kaehler, Dieter, 4,438,806, Cl. 165-108.000.

Alfachimici S.p.A.: *See*—
Tomaiuolo, Francesco; and Capano, Michele, 4,439,338, Cl. 252-79.100.

Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, to Bell Telephone Laboratories, Incorporated. Fabrication method for $LiNbO_3$ and $LiTaO_3$ integrated optics devices. 4,439,265, Cl. 156-606.000.

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Herrmann, Fritz; and Ost, Christian, 4,439,279, Cl. 204-1.500.

Alldredge, Robert L.; and Deltour, Robert J. Slide conveyor with side stabilizers. 4,438,842, Cl. 198-838.000.

Allen, Craig E.: *See*—
Canterino, Peter J.; and Allen, Craig E., 4,439,260, Cl. 156-259.000.

Allen, Ralph E., to Raymond Corporation, The. Material handling apparatus. 4,439,102, Cl. 414-633.000.

Allevato, Tony E., to Texas Instruments Incorporated. Apparatus and method of material removal having a fluid filled slot. 4,439,244, Cl. 134-33.000.

Allied Corporation: *See*—
Curley, James H.; and Lang, Roger J., 4,439,001, Cl. 339-176.0MP.
Lang, Donald D., 4,438,999, Cl. 339-176.0MF.
Patel, Gordhanbhai N.; and Ivory, Dawn M., 4,439,346, Cl. 252-408.100.
Ramanan, V. R. V., 4,439,253, Cl. 148-403.000.
Ray, Ranjan, 4,439,236, Cl. 75-123.00B.

Allread, Alan R., to Aeroquip Corporation. Ball valve coupling. 4,438,779, Cl. 137-614.060.

Almagor, Daniel, to Peelle Company, The. Automatic ejector system. 4,439,103, Cl. 414-661.000.

Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Inc. Bonded sheath cable. 4,439,632, Cl. 174-106.00D.

Alps Electric Co., Ltd.: *See*—
Fujisawa, Kyuichi, 4,439,778, Cl. 346-136.000.
Kagawa, Yoshii, 4,439,753, Cl. 338-325.000.
Komatsu, Hiroaki; and Yoshioka, Kenji, 4,439,749, Cl. 334-7.000.

Alsthom-Atlantique: *See*—
Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, 4,439,651, Cl. 200-144.0AP.

Altemark, Detlef; Sommers, Hans; and Weid, Manfred, to Ruhrgas Aktiengesellschaft. Process for the operation of premixture burners and burner for carrying out the process. 4,439,135, Cl. 431-2.000.

Altermatt, Ruedi; and Jakob, Hans, to Sandoz Ltd. Stable disperse dye compositions comprising at least two monoazo dyes. 4,439,207, Cl. 8-639.000.

Altherr, Russell G., to Amsted Industries Incorporated. Railway coupler shelf chamfer. 4,438,855, Cl. 213-153.000.

Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., to Zenith Radio Corporation. Method and apparatus for testing line screen CRT registration. 4,439,735, Cl. 324-404.000.

Alza Corporation: *See—*
Amkraut, Alfred A.; and Martins, Agusto B., 4,439,199, Cl. 604-894.000.
Swanson, David; and Edgren, David, 4,439,195, Cl. 604-890.000.
Theeuwes, Felix, 4,439,183, Cl. 604-85.000.

Amberny, Philippe; and de Mendez, Michel O., to Souriau et Cie; and Societe d'Etudes et Applications Techniques S E A T. Prehension unit and manipulator apparatus including optical sensors. 4,439,674, Cl. 250-227.000.

American Colloid Co.: *See—*
Kingsbury, Robert P., 4,439,062, Cl. 405-24.000.

American Cyanamid Company: *See—*
Drabb, Thomas W., 4,439,607, Cl. 546-89.000.
Du, Mila T.; and Shepherd, Robert G., 4,439,606, Cl. 544-356.000.
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.
Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., 4,439,332, Cl. 252-8.55D.
Raghu, Sivaraman; Proverb, Robert J.; and Peake, Steven L., 4,439,611, Cl. 548-533.000.
Singh, Balwant; Chang, Laurence W.; and Forgione, Peter S., 4,439,616, Cl. 560-25.000.

American Dental Association Health Foundation: *See—*
Argentar, Harold, 4,439,554, Cl. 523-115.000.

American Standard Inc.: *See—*
LeFevere, Robert E., 4,439,080, Cl. 412-9.000.

AMF Inc.: *See—*
Kauffman, Glenn A., 4,439,730, Cl. 324-232.000.

Amkraut, Alfred A.; and Martins, Agusto B., to Alza Corporation. Method for administering immunopotentiator. 4,439,199, Cl. 604-894.000.

AMP Incorporated: *See—*
Evans, William R., 4,438,997, Cl. 339-97.00R.
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., 4,439,000, Cl. 339-176.0MP.
Myers, Ronald W., 4,438,998, Cl. 339-154.00A.

Amsted Industries Incorporated: *See—*
Altherr, Russell G., 4,438,855, Cl. 213-153.000.

Amway Corporation: *See—*
Senour, Walter H., 4,438,540, Cl. 15-119.00A.

Anagnostidis, Marc: *See—*
Develay, Roger; and Anagnostidis, Marc, 4,439,246, Cl. 148-2.000.

Analog Devices, Incorporated: *See—*
Morong, William H., III, 4,439,724, Cl. 324-55.000.

Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., to Andersons, The. Suppression of food dusts and the like. 4,439,211, Cl. 55-1.000.

Anderson, John C.: *See—*
Sun, Lilla S.; and Anderson, John C., 4,439,347, Cl. 252-408.100.

Anderson, Lyle C. Device for reopening an ice-bound water source. 4,438,757, Cl. 126-360.00R.

Anderson, Paul H.: *See—*
Sackis, John J.; and Anderson, Paul H., 4,439,563, Cl. 524-96.000.

Anderson, Rodney H.; and Cameron, Thomas M., to Dresser Industries, Inc. Boom arm with rock deflection feature. 4,439,089, Cl. 414-722.000.

Andersons, The: *See—*
Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., 4,439,211, Cl. 55-1.000.

Ando, Takao: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.

Andreev, Alexandr M.: *See—*
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.

Anic S.p.A.: *See—*
Verdini, Antonio S.; and Viscomi, Giuseppe C., 4,439,360, Cl. 260-112.50R.

Antczak, Thaddeus. Vacuum injection molding process. 4,439,386, Cl. 264-102.000.

Antkowiak, Richard P.: *See—*
Rockwood, Robert E.; and Antkowiak, Richard P., 4,439,096, Cl. 415-131.000.

Antonellis, Stephen M., to United Technologies Corporation. Rotor blade cooling air chamber. 4,439,107, Cl. 416-95.000.

Aoyagi, Kenichi: *See—*
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,742, Cl. 123-308.000.
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,743, Cl. 123-308.000.

Appleton Papers, Inc.: *See—*
Noffke, Roy O.; and Engel, Thomas G., 4,438,673, Cl. 83-502.000.

Appleyard, John A., to Owens-Illinois, Inc. Heat setting method. 4,439,394, Cl. 264-535.000.

Aprato, Armando, to Ing. C Olivetti & C., S.p.A. Thermal serial dot printer. 4,439,777, Cl. 346-76.0PH.

Aqua-Chem, Inc.: *See—*
Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., 4,439,138, Cl. 431-12.000.

Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, to Aisin Seiki Kabushiki Kaisha. Hydraulic lash adjuster. 4,438,739, Cl. 123-90.550.

Aralis, Frank M.: *See—*
Van Vliet, James G.; and Aralis, Frank M., 4,439,762, Cl. 340-750.000.

Araujo, Roger J., to Corning Glass Works. Spontaneous opal glass compositions. 4,439,528, Cl. 501-32.000.

Arbed S.A.: *See—*
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Archer, Michael C.; and Jain, Kanti, to Ontario Cancer Institute. Method for producing self-reproducing mammalian pancreatic islet-like structures. 4,439,521, Cl. 435-1.000.

Arco Industries Ltd.: *See—*
Marino, Joseph A., 4,438,587, Cl. 46-44.000.

Argentar, Harold, to American Dental Association Health Foundation. Dioxo-piperidine substituted tertiary aromatic amine accelerators in acrylic resin. 4,439,554, Cl. 523-115.000.

Arild, Tor. Tilt back mechanism for a chair. 4,438,978, Cl. 297-304.000.

Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, to Sumitomo Metal Mining Company Limited; Nippon Telegraph and Telephone Public Corporation; and Nippon Telecommunication Engineering Company Limited. Method for manufacture of high-strength high-electroconductivity copper alloy. 4,439,247, Cl. 148-2.000.

Armbruster, David R.: *See—*
Johnson, Calvin K.; and Armbruster, David R., 4,439,489, Cl. 428-404.000.

Armco Inc.: *See—*
Pokladnik, Roger L.; and Valka, William A., 4,438,817, Cl. 166-341.000.
Pokladnik, Roger L., 4,439,068, Cl. 405-169.000.

Armell, Richard A., to Boc-Nowsco Limited; and Drexel Equipment Limited. Seal for incorporation in high pressure leak testing tool. 4,438,938, Cl. 277-230.000.

Armour Food Company. *See—*
Orlowski, Gerald J.; and Adamson, Robert S., 4,439,101, Cl. 414-126.000.

Arnold, Dan M.: *See—*
Smith, Harry D., Jr.; and Arnold, Dan M., 4,439,676, Cl. 250-256.000.

Arter, William L., to Jetline Engineering, Inc. Arc welding apparatus having pivotably mounted electrode carriage. 4,439,665, Cl. 219-124.020.

Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, to Shoei Chemical Inc. Resistor compositions and resistors produced therefrom. 4,439,352, Cl. 252-518.000.

Asahi-Dow Limited: *See—*
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

Asahi Glass Company, Ltd.: *See—*
Kume, Masaharu; Ishii, Kenichi; and Hokusho, Takayasu, 4,439,771, Cl. 343-704.000.
Yamabe, Masaaki; and Akiyama, Katsuyuki, 4,439,217, Cl. 55-158.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kikuzawa, Kenji; and Akasaka, Shozo, 4,439,059, Cl. 405-25.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Okura, Zenichi; and Kohmoto, Shinsuke, 4,439,029, Cl. 354-479.000.

Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, to Fuji Machine Mfg. Co. Ltd. Apparatus for automatically mounting non-lead electronic components on printed-circuit. 4,438,559, Cl. 29-740.000.

Asaoka, Sachio; Ono, Takeo; and Shiroto, Yoshimi. Catalyst for hydrotreating heavy hydrocarbon oils, method of preparing same and process for hydrotreating heavy hydrocarbon oils. 4,439,312, Cl. 208-216.0PP.

Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, to Kabushiki Kaisha Kobe Seiko Sho. Apparatus for stacking elongated materials. 4,439,099, Cl. 414-45.000.

Ashland Oil, Inc.: *See—*
Daniel, Chelliah, 4,439,621, Cl. 562-599.000.

Ashton, Harold P., to Dart Industries Inc. Egg scoop or spoon. 4,438,564, Cl. 30-324.000.

Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, to Societe d "Expansion Scientifique "Expansia". Acrylic copolymers of N-acryloylpolymethyleneimines or N-acryloyldialkylamides, N,N'-acryloyldiaminoalcanes and N-acryloylaminoacids (or esters) their preparation and use as cation exchangers. 4,439,545, Cl. 521-32.000.

Atherton, Jay W., to Honeywell Inc. Class D pulse width modulated amplifier. 4,439,738, Cl. 330-10.000.

Atkinson, Lyle H. Cooling container for canned beverages and sandwiches. 4,438,637, Cl. 62-457.000.

Atlantic Richfield Company: *See—*
Chu, Alan K. P., 4,439,466, Cl. 427-123.000.
DiGiulio, Adolph V., 4,439,547, Cl. 521-56.000.
Martin, F. Glenn, 4,439,677, Cl. 250-260.000.
Martin, F. Glenn, 4,439,678, Cl. 250-260.000.

Miller, Stephen C., 4,439,463, Cl. 427-39.000.
Atlas Powder Company: *See—*
Mullay, John J., 4,439,254, Cl. 149-2.000.
Aton, Ronald L. Stick-on fog light lens for headlight. 4,439,817, Cl. 362-255.000.
Audeh, Costandi A.; and Scott, Eric J. Y., to Mobil Oil Corporation. Petroleum processing with low acidity catalyst. 4,439,310, Cl. 208-111.000.
Audette, Gabriel: *See—*
McGourty, Lawrence E., Jr.; Audette, Gabriel; and Audette, Jean M., 4,438,604, Cl. 52-28.000.
Audette, Jean M.: *See—*
McGourty, Lawrence E., Jr.; Audette, Gabriel; and Audette, Jean M., 4,438,604, Cl. 52-28.000.
Ault, Earle A.; and Bevan, Charles E., to United Technologies Corporation. Cleaning process for internal passages of superalloy airfoils. 4,439,241, Cl. 134-22.170.
Ayerst, McKenna & Harrison Inc.: *See—*
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.
B. F. Goodrich Co., The: *See—*
Chasar, Dwight W., 4,439,564, Cl. 524-101.000.
Baba, Keikichi: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,539, Cl. 502-112.000.
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,541, Cl. 502-125.000.
Baba, Sadaaki, to Mitsubishi Denki Kabushiki Kaisha. Power interruption device. 4,439,803, Cl. 361-63.000.
Babcock & Wilcox Company, The: *See—*
Berbakov, Paul J., 4,438,600, Cl. 51-241.00S.
Babic, Gary T., to Texaco Inc. Preparation for use as lube oil additives of thioureas containing N-polyalkyleneamino hydrocarbyl succinimido groups. 4,439,612, Cl. 548-546.000.
Baby Relax: *See—*
Guillaume, Raymond, 4,438,941, Cl. 280-47.400.
Badger Die Casting Corp.: *See—*
Strassman, Richard J., 4,439,145, Cl. 432-164.000.
Bagby, Robert R.: *See—*
Carpenter, Aaron R.; and Bagby, Robert R., 4,438,794, Cl. 144-208.00E.
Bailey, Denis M.: *See—*
Wentland, Mark P.; and Bailey, Denis M., 4,439,436, Cl. 424-258.000.
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., to UNC Recovery Corporation. Method for varying the mixing time and proportions in the contacting of substantially immiscible liquids. 4,439,405, Cl. 423-10.000.
Baker, Benjamin H.: *See—*
Baker, Stanley Z.; and Baker, Benjamin H., 4,438,584, Cl. 43-58.000.
Baker, Stanley Z.; and Baker, Benjamin H., to J. T. Eaton & Company, Inc. Trap for rats, mice, and other vermin. 4,438,584, Cl. 43-58.000.
Bakk, Henry: *See—*
Bakk, Thorleif; and Bakk, Henry, 4,439,067, Cl. 405-154.000.
Bakk, Thorleif; and Bakk, Henry, to deha Baubedarf GmbH & Co. KG. Method of laying and joining pipes and a lifting device for performing the method. 4,439,067, Cl. 405-154.000.
Balagot, Reuben C.: *See—*
Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., 4,439,452, Cl. 424-319.000.
Ball Corporation: *See—*
Frame, Wayne W., 4,439,788, Cl. 358-213.000.
Ball, Harold L., to Orenco Systems, Inc. Method of discharging septic tank filtered effluent. 4,439,323, Cl. 210-608.000.
Ballany, John M.; and Henderson, David, to Janssen Pharmaceutica N.V. Non-irritating tetramisole- or levamisole pour-on compositions. 4,439,439, Cl. 424-270.000.
Ballard, Richard E.: *See—*
Louik, Leonard; and Ballard, Richard E., 4,439,128, Cl. 425-290.000.
Bandi, Jean-Pierre: *See—*
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,438,681, Cl. 99-323.200.
Baniel, Avraham M.; and Eyal, Aharon M., to Yissum Research Development Company of the Hebrew University of Jerusalem. Process and extractant for removing fluorine compounds from aqueous phosphoric acid. 4,439,408, Cl. 423-321.00S.
Bannon, J. David: *See—*
Campanella, Alexander F.; and Bannon, J. David, 4,438,532, Cl. 2-16.000.
Bar, Helmut: *See—*
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.
Barber, Alan G., to Union Carbide Corporation. Sealant composition and method. 4,439,561, Cl. 524-13.000.
Barnett, Allan E.: *See—*
Carter, James L.; and Barnett, Allan E., 4,439,544, Cl. 502-234.000.
Barrickman, Robert W. Emergency cricothyroidotomy instrument. 4,438,768, Cl. 128-305.300.
Bartfield, William, to Prize Frize, Inc. Apparatus for dispensing individual orders of a hot food product and components usable therewith. 4,438,683, Cl. 99-330.000.
Bartlett, Allen J.: *See—*
Lessard, Philip A.; and Bartlett, Allen J., 4,438,632, Cl. 62-55.500.
Bartnik, Friedhelm: *See—*
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, 4,439,418, Cl. 424-70.000.
Bartoli, Thomas J.; and Rotblum, Yehuda, to Bell Telephone Laboratories, Incorporated. Non-inverting shift register stage in MOS technology. 4,439,691, Cl. 307-279.000.
Baschang, Gerhard: *See—*
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.
BASF Aktiengesellschaft: *See—*
Fitterer, Horst; Koob, Hubert; and Nestler, Bert, 4,438,892, Cl. 242-199.000.
Koenig, Karl-Heinz; and Schwendemann, Volker, 4,439,369, Cl. 260-453.00P.
Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
BASF Farben + Fasern AG: *See—*
Schwarz, Gunther, 4,439,575, Cl. 524-489.000.
Basic, John N., Sr. Incinerator with two reburn stages, and, optionally, heat recovery. 4,438,705, Cl. 110-235.000.
Basinger, Richard A.: *See—*
Hemmerle, Clayton J.; and Basinger, Richard A., 4,438,800, Cl. 160-371.000.
Basset, Jean-Claude; and Belenfant, Guy, to Electronique Marcel Dassault. Method and device for the checking of the number of access attempts to an electronic store, notably that of an integrated circuit of an object such as a credit card or a buyer's card. 4,439,670, Cl. 235-382.000.
Bastrikov, Valery L.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.
Bates Printing Specialties, Inc.: *See—*
Brown, Lyman J., 4,439,002, Cl. 350-4.100.
Bauer, Robert L.: *See—*
Rienks, Bert J., 4,439,098, Cl. 414-43.000.
Baughman, David R.; and Bergeson, Jerry R., to Occidental Research Corporation. Method of repair of short circuits for in situ leaching. 4,438,976, Cl. 299-4.000.
Baughman, Donald L.; and Elliott, William O., to McConway & Torley Corporation. Railway coupler. 4,438,854, Cl. 213-127.000.
Baxter Travenol Laboratories, Inc.: *See—*
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,439,188, Cl. 604-283.000.
Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., 4,439,421, Cl. 424-85.000.
Lueders, Arthur; and Bellotti, Marc, 4,439,179, Cl. 604-34.000.
Bayer Aktiengesellschaft: *See—*
Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, 4,439,589, Cl. 526-209.000.
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.
Ebneth, Harold; and Fitzky, Hans-Georg, 4,439,768, Cl. 343-18.00B.
Hildebrand, Dietrich; and Hendricks, Udo W., 4,439,206, Cl. 8-543.000.
Hugl, Herbert; Wolfrum, Gerhard; and Lehment, Klaus-Friedrich, 4,439,372, Cl. 260-465.00E.
Klauke, Erich; and Grohe, Klaus, 4,439,620, Cl. 562-493.000.
Klotz, Helmut; and Fitzky, Hans G., 4,439,292, Cl. 204-165.000.
Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.
Puppe, Lothar; and Weisser, Jurgen, 4,439,409, Cl. 423-328.000.
Schutt, Hermann, 4,439,524, Cl. 435-280.000.
Bayerische Motoren Werke Aktiengesellschaft: *See—*
Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, 4,439,013, Cl. 350-307.000.
Beardsley, Paul F. Method and means of servicing an overhead limb of a growing plant. 4,438,620, Cl. 56-332.000.
Beckman Instruments, Inc.: *See—*
Conway, George E., 4,439,177, Cl. 494-20.000.
Sun, Lilla S.; and Anderson, John C., 4,439,347, Cl. 252-408.100.
Van Vliet, James G.; and Aralis, Frank M., 4,439,762, Cl. 340-750.000.
Beekmans, Jan J. P. M.; and Hughes, John B., to Signetics Corporation. Feedback-controlled substrate bias generator. 4,439,692, Cl. 307-297.000.
Beentjes, Nicolaas H., to Estel Hoogovens B.V. Sublance for measuring and/or sampling in a metallurgical furnace. 4,438,653, Cl. 73-863.110.
Beer, Wolfgang: *See—*
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.
Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y. Process for producing hydrogen from hydrogen sulphide in a gas fluidized bed reactor. 4,439,412, Cl. 423-573.00G.
Behringer, Hartmut: *See—*
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, 4,439,361, Cl. 260-141.000.
Beier, Helmut, to Siemens AG. Contact system for gas blast circuit breakers. 4,439,652, Cl. 200-148.00A.
Belenfant, Guy: *See—*
Basset, Jean-Claude; and Belenfant, Guy, 4,439,670, Cl. 235-382.000.

Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., to Odessky Politekhnichesky Institut. Electric motor having helical stator. 4,439,702, Cl. 310-80.000.

Bell, James L., Jr.: *See*—
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.

Bell, Raymond W. H., to Dunlop Limited. Upholstery components. 4,439,472, Cl. 428-71.000.

Bell Telephone Laboratories, Incorporated: *See*—
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yaniveski, George M., 4,439,632, Cl. 174-106.00D.
Bartoli, Thomas J.; and Rotblum, Yehuda, 4,439,691, Cl. 307-279.000.
Chu, Ta-Shing, 4,439,773, Cl. 343-778.000.
Coldren, Larry A.; and Stulz, Lawrence W., 4,439,268, Cl. 156-626.000.
Dragone, Corrado, 4,439,748, Cl. 333-239.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,759, Cl. 340-703.000.
Fleming, James R., 4,439,760, Cl. 340-799.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,761, Cl. 340-735.000.
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,439,007, Cl. 350-96.300.
Limb, John O., 4,439,763, Cl. 340-825.500.
Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, 4,439,870, Cl. 378-143.000.

Bellamy, John C., to Rockwell International Corporation. Partial response system with simplified detection. 4,439,863, Cl. 375-18.000.

Bellini, Francesco: *See*—
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.

Bellotti, Marc: *See*—
Lueders, Arthur; and Bellotti, Marc, 4,439,179, Cl. 604-34.000.

Benczur-Urmossy, Gabor: *See*—
Schneider, Claus; and Benczur-Urmossy, Gabor, 4,439,281, Cl. 204-2.100.

Bendix Corporation, The: *See*—
Bunger, Dennen J., 4,439,117, Cl. 418-22.000.
Menin, Albert S., 4,439,844, Cl. 367-87.000.

Bendix Limited: *See*—
Lippiatt, Sidney A., 4,438,980, Cl. 303-6.00C.

Bentley Laboratories, Inc.: *See*—
Sargeant, John E.; and Hoffa, Jack L., 4,439,189, Cl. 604-317.000.

Berbakov, Paul J., to Babcock & Wilcox Company, The. Grinding, welding and cutting apparatus. 4,438,600, Cl. 51-241.00S.

Berestecki, Stephen B., to General Electric Company. Apparatus for attaching a ceramic member to a metal structure. 4,438,626, Cl. 60-39.320.

Bergendahl, Hans G., to Maschinenfabrick Koppern GmbH & Co. KG. Method for manufacturing graules from potassium chloride fines. 4,439,384, Cl. 264-37.000.

Bergeson, Jerry R.: *See*—
Baughman, David R.; and Bergeson, Jerry R., 4,438,976, Cl. 299-4.000.

Bergfeld, Manfred: *See*—
Zengel, Hans; and Bergfeld, Manfred, 4,439,370, Cl. 260-453.00P.

Berggren, Per-Olov, to Skega AB. Meshing cog-wheel injection unit with lateral sealing and scropers. 4,439,120, Cl. 418-77.000.

Bergles, Eduard, to Fichtel & Sachs AG. Derailleur mechanism. 4,439,171, Cl. 474-80.000.

Bergwerksverband GmbH: *See*—
Galow, Manfred, 4,439,276, Cl. 202-239.000.

Berk, Dimitrios: *See*—
Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y., 4,439,412, Cl. 423-573.00G.

Bernady, Karel F.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

Bernard, Alain; and Chedeville, Robert, to Couturier S.A. System for the mutual anchoring of two walls. 4,438,612, Cl. 52-427.000.

Berney, Jean-Claude, to U.S. Philips Corporation. Control device for a stepping motor. 4,439,717, Cl. 318-696.000.

Bernstein, Joel E., to Soft Sheen Products, Inc. Method and composition for treating pediculosis. 4,439,427, Cl. 424-199.000.

Berruti, Pierangelo: *See*—
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.

Bertoglio, Guido, to Water-Line S.A. Apparatus to continuously mix and homogenize powdered substances with liquid substances. 4,439,042, Cl. 366-154.000.

Bertus, Brent J.; and McKay, Dwight L., to Phillips Petroleum Company. Hydrocarbon cracking catalyst. 4,439,536, Cl. 502-64.000.

Besse, Maurice; and Grisoni, Jacques, to Fresse S.A. Device for fabricating panels of expanded synthetic materials. 4,439,122, Cl. 425-4.00R.

Best, David W.; and Russell, Jeffrey D., to Rockwell International Corporation. Apparatus for and method of generation of ripple carry signals in conjunction with logical adding circuitry. 4,439,835, Cl. 364-786.000.

Beton- es Vasbetonipari Muvek: *See*—
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.

Betts, Max W., to Courtaulds Limited. Presser foot for a knitting machine. 4,438,639, Cl. 66-64.000.

Beukema, Duane M.: *See*—
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,438,898, Cl. 248-561.000.

Bevan, Charles E.: *See*—
Ault, Earle A.; and Bevan, Charles E., 4,439,241, Cl. 134-22.170.

Bewers, Ronald, to Ford Motor Company. Tilt cab support stay. 4,438,826, Cl. 180-89.140.

Bey, Philippe; Gerhart, Fritz; and Jung, Michel, to Merrell Toraude et Compagnie. Fluorinated pentene diamine derivatives. 4,439,619, Cl. 560-169.000.

Bianchetti, Alberto: *See*—
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.

Biard, Francoise M. H.: *See*—
Lacoste, Francois R.; and Biard, Francoise M. H., 4,439,471, Cl. 428-35.000.

Bickle, Damon R. Liquid directional flow apparatus. 4,438,537, Cl. 4-492.000.

Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, to Hoechst Aktiengesellschaft. Textile softener. 4,439,331, Cl. 252-8.800.

Biotest-Serum-Institut GmbH: *See*—
Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, 4,439,357, Cl. 260-112.00B.

Biphase Energy Systems: *See*—
Hays, Lance G.; Studhalter, Walter R.; and Ritzi, Emil W., 4,438,638, Cl. 62-500.000.

Birkenmaier, Wilhelm: *See*—
Negele, Richard; and Birkenmaier, Wilhelm, 4,438,989, Cl. 308-184.00R.

Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, to Siemens Aktiengesellschaft. Method for anodizing aluminum materials and aluminized parts. 4,439,287, Cl. 204-58.000.

Bishnoi, P. Raj: *See*—
Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y., 4,439,412, Cl. 423-573.00G.

Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., to Bowen Tools, Inc. Shock absorber assembly. 4,439,167, Cl. 464-20.000.

Bittihn, Rainer; and Yalcin, Eren, to Varta Batterie Aktiengesellschaft. Galvanic element having a porous solid-electrolyte sinter framework containing the cathode material. 4,439,502, Cl. 429-104.000.

Blackburn, Tom L., to GTE Automatic Electric Incorporated. Carrier subscriber telephone off-hook detector. 4,439,634, Cl. 179-2.510.

Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., to University of Minnesota, Regents of the. Polyol-hormone mixture for use in chronic parenteral hormone administration. 4,439,181, Cl. 604-56.000.

Blaine, George. Training manikin for medical instruction. 4,439,162, Cl. 434-268.000.

Blais, Norman J., to CPC Engineering Corporation. Pressurized filtration system. 4,439,325, Cl. 210-740.000.

Blasioli, Carlo: *See*—
Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, 4,439,442, Cl. 424-285.000.

Bligh, Stephen G.: *See*—
Everett, Douglas H.; Bligh, Stephen G.; and Rojas, Fernando, 4,439,349, Cl. 502-180.000.

Block, Gene D.: *See*—
Friesen, W. Otto; and Block, Gene D., 4,438,771, Cl. 128-671.000.

Blok, Arie. Solids concentrator. 4,439,320, Cl. 210-394.000.

Blue Grass Industries, Inc.: *See*—
Smith, Samuel W.; and McVey, Harold C., 4,438,714, Cl. 112-130.000.

Boberski, William G.: *See*—
Greigger, Paul P.; Boberski, William G.; and Seiner, Jerome A., 4,439,239, Cl. 106-287.160.

Bobichon, Jacques; and Leroy, Pierre-Loup, to Stein Industrie. Stopper for a source for an X-ray inspection hole in a pipe or other apparatus. 4,438,784, Cl. 138-92.000.

Boc-Nowsco Limited: *See*—
Armell, Richard A., 4,438,938, Cl. 277-230.000.

Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, to Villamosipari Kutato Intezet. Procedure and equipment for destroying waste by plasma technique. 4,438,706, Cl. 110-238.000.

Boehringer Mannheim GmbH: *See*—
Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.

Bogner, Ben R., to Quaker Oats Company, The. Fabrication of composite articles. 4,439,568, Cl. 524-111.000.

Bohler, Hans, to Sandoz Ltd. Polymeric material mass-dyed with certain metalized bis-azomethine dyestuffs. 4,439,562, Cl. 524-90.000.

Boitano, Robert A.: *See*—
Engle, Charles J.; and Boitano, Robert A., 4,438,923, Cl. 273-1.50R.

Boles, Jeffrey L.; and Jones, Thomas M., to Tennessee Valley Authority. Production of urea-ammonium nitrate suspension fertilizer. 4,439,223, Cl. 71-30.000.

Bolgiano, Duane R.: *See*—
Seligsohn, Scott; Bolgiano, Duane R.; and Seligsohn, Sherwin I., 4,439,638, Cl. 179-84.00C.

Bona, Eligio, to Fiat Auto S.p.A. Device for preventing the unauthorized removal of fuel from the tank of a motor vehicle. 4,438,862, Cl. 220-86.0AT.

Bond, Gary M.: *See*—
Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., 4,439,156, Cl. 434-12.00.

Bondi, Joseph V.: *See*—
Harwood, Richard J.; and Bondi, Joseph V., 4,439,194, Cl. 604-890.000.

Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, to Biotest-Serum-Institut GmbH. Process for obtaining hepatitis-safe, sterile hemoglobin solutions free of pyrogens and stroma. 4,439,357, Cl. 260-112.00B.

Bonin, John H.: *See*—
Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., 4,439,200, Cl. 406-99.000.

Bonny, Alan, to Standard Oil Company, The. Novel boride catalysts and process for the preparation and use thereof. 4,439,542, Cl. 502-207.000.

Bookbinder, Dana C.: *See*—
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Booms, Robert E.: *See*—
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.

Borchardt, John K., to Halliburton Company. Enhanced oil recovery methods and systems. 4,439,334, Cl. 252-8.55D.

Borel, Denis, to SRO Kugellagerwerke J. Schmid-Roost AG. Ball bushing of simplified construction. 4,438,985, Cl. 308-6.00C.

Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., to Combustion Engineering, Inc. System and method for firing coal having a significant mineral content. 4,438,709, Cl. 110-347.000.

Born, Raymond W. Stairway with fail safe power lift for lading, the infirm, wheelchair patients, and the like. 4,438,830, Cl. 187-12.000.

Borowski, Edward: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Borter, Ephraim, to Inventio AG. Push button for electrical switch. 4,439,655, Cl. 200-340.000.

Bosack, Donald J.: *See*—
Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., 4,439,719, Cl. 320-31.000.

Bosch & Pierburg System oHG: *See*—
Hartel, Gunter; and Schurfeld, Armin, 4,439,376, Cl. 261-50.00A.

Boucher, Graeme B., to Paccar Inc. Vehicle cab suspension. 4,438,970, Cl. 296-190.000.

Bouck, James G.: *See*—
Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., 4,438,971, Cl. 296-191.000.

Bousaid, Issam S., to Texaco Inc. Oil recovery method employing alternate slugs of surfactant and fresh water. 4,438,814, Cl. 166-273.000.

Bouvrande, Andre M., to Societe de Telecommunications Electronique Aeronautique et Maritime T.E.A.M. Keyboard switch assembly. 4,439,646, Cl. 200-5.00A.

Boveri, Sergio: *See*—
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.

Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, to Ing. C. Olivetti & C., S.p.A. Serial dot printer for office machines. 4,439,779, Cl. 346-140.0PD.

Bowen Tools, Inc.: *See*—
Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.

Bowers, John L.: *See*—
Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., 4,439,266, Cl. 156-614.000.

Bowers, William J., to C. R. Bard, Inc. Electrosurgical generator. 4,438,766, Cl. 128-303.140.

Box, Nigel J.: *See*—
Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., 4,438,837, Cl. 198-735.000.

Boyer, Daniel R.: *See*—
Kresky, Fred C.; and Boyer, Daniel R., 4,438,974, Cl. 297-379.000.

Boyle, David H., to International Business Machines Corporation. Low capacitance pad for semiconductor chip testing. 4,439,727, Cl. 324-158.00R.

Bradford, James N., to MRJ, Inc. Solid state laser with controlled optical pumping. 4,439,861, Cl. 372-25.000.

Bradley, Joe C.: *See*—
Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, 4,439,016, Cl. 350-356.000.

Brajder, Antonio, to Siemens Aktiengesellschaft. Short-circuit protection device for a DC control element. 4,439,806, Cl. 361-98.000.

Branco, Antonio: *See*—
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.

Brandle, Karl: *See*—
Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.

Bras, Johan C.: *See*—
Schalk, Bartje; Operti, Claudio; and Bras, Johan C., 4,438,990, Cl. 308-187.100.

Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., to United States of America, Navy. Helmet mounted display projector. 4,439,157, Cl. 434-40.000.

Brekke, Carroll E. Solar heating unit and heat transfer apparatus. 4,438,758, Cl. 126-419.000.

Brende, Arthur P.; and Luoma, Richard W., to International Business Machines Corporation. Linear moving coil actuator. 4,439,699, Cl. 310-13.000.

Brenholt, David L., to Donaldson Company, Inc. Spirally wound flow control valve. 4,438,781, Cl. 137-625.280.

Brennan, Michael E.; and Rice, Doris M., to Texaco Inc. Scrap rim polyurethane modified extender polyols. 4,439,546, Cl. 521-48.000.

Brennan, Michael E., to Texaco Inc. Novel aromatic polyester polyol mixtures made from polyethylene terephthalate residues and alkylene oxides. 4,439,549, Cl. 521-131.000.

Brennan, Michael E., to Texaco Inc. Aromatic polyols made from recycled polyethylene terephthalate waste streams, alkylene glycol and dibasic acid waste streams. 4,439,550, Cl. 521-131.000.

Brennan, Michael E.: *See*—
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., 4,439,551, Cl. 521-131.000.

Bresin, Mark S.; and Gilmore, Peter B., to Motorola, Inc. Waterproof control knob assembly with integral switch. 4,439,654, Cl. 200-302.100.

Breslow, Jeffrey D.: *See*—
Wildman, John R.; and Breslow, Jeffrey D., 4,438,586, Cl. 46-1.00R.

Bresson, Clarence R.: *See*—
Pariman, Robert M.; and Bresson, Clarence R., 4,439,314, Cl. 209-166.000.

Breuillard, Robert: *See*—
Pelletier, Joel A.; and Breuillard, Robert, 4,439,695, Cl. 307-477.000.

Brico Engineering Limited: *See*—
Slee, Roger H., 4,438,740, Cl. 123-188.00S.

Bridgestone Tire Company Limited: *See*—
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.

Brightman, Alan H., II; and Theodorakis, Michael C., to University of Illinois Foundation. Biodegradable ocular insert for controlled delivery of ophthalmic medication. 4,439,198, Cl. 604-894.000.

Bril, Thijs W.; and van den Hoek, Willibrordus G. M., to U.S. Philips Corporation. Reactive ion etching of soft-magnetic substrates. 4,439,294, Cl. 204-192.00E.

Broadhurst, John H., to University of Minnesota, Regents of the. Color-coded mapping system and method for identifying elements in a specimen. 4,439,680, Cl. 250-310.000.

Brockway, George S., II: *See*—
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yamizeski, George M., 4,439,632, Cl. 174-106.00D.

Brockway, William J.: *See*—
Coan, Michael H.; and Brockway, William J., 4,439,358, Cl. 260-112.00B.

Broderie de Mesnil St Pere S.A.R.L.: *See*—
Ducellier, Hugues, J. M., 4,438,712, Cl. 112-100.000.

Bromps, Robert T.: *See*—
Dooley, Dan W.; and Bromps, Robert T., 4,438,872, Cl. 222-217.000.

Brooks, Ulysses A.: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Brown, Albert W., to International Telephone & Telegraph Corp. Aerial refueling boom nozzle. 4,438,793, Cl. 141-382.000.

Brown, Boveri & Cie AG: *See*—
Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, 4,439,726, Cl. 324-156.000.

Brown, Lyman J., to Bates Printing Specialties, Inc. One-piece foldable kaleidoscope kit. 4,439,002, Cl. 350-4.100.

Brown, Paul: *See*—
Rees, Herbert; Brown, Paul; and Grund, Miroslaw, 4,439,133, Cl. 425-556.000.

Brown, Robert J.: *See*—
Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, 4,439,169, Cl. 464-170.000.

Brown, William L., to Leighton, John D. Switch assembly for automotive pedal construction. 4,439,650, Cl. 200-61.890.

Brown & Williamson Tobacco Corporation: *See*—
Lamb, Charles G.; and Sanford, Robert A., 4,438,776, Cl. 131-336.000.

Bruce, James A.: *See*—
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Bruney, Paul F., III, to Jaskiewicz, Edmund M., a part interest. Loud speaker enclosure. 4,439,644, Cl. 179-146.00E.

Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus. Apparatus for conditioning bioinjurious waste. 4,439,403, Cl. 422-159.000.

Brunswick Corporation: *See*—
Grover, Richard L., 4,438,858, Cl. 220-3.000.

Brunton Company, The: *See*—
Kramer, Melvin G.; and Iden, Marlin, 4,438,568, Cl. 33-348.000.

Bryant, George E., to W. R. Grace & Co. Stud fasteners and wall structures employing same. 4,438,611, Cl. 52-309.200.

Brzezinski, Denis R.: *See*—
Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., 4,439,076, Cl. 410-153.000.

BSG (Security) Limited: *See*—
Gillham, Peter J., 4,439,808, Cl. 361-144.000.

bso Steuerungstechnik GmbH: *See*—
Gibas, Christoph, 4,439,751, Cl. 335-278.000.

Buchberger, Gregory: *See*—
Theis, Peter F.; and Buchberger, Gregory, 4,439,635, Cl. 179-6.200.

Bucking, Hans-Walter: *See*—
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,439,331, Cl. 252-8.800.

Budd Company, The: *See*—
Eggert, Walter S., Jr., 4,438,703, Cl. 105-224.100.

Budnik, Brian J., to Motorola, Inc. Ferroresonant power supply stabilizer circuit for avoiding sustained oscillations. 4,439,722, Cl. 323-248.000.

Buhl, Lawrence L.: *See*—
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.

Buhler, Eugen. Process and apparatus for the transport of a train of flaskless casting molds. 4,438,801, Cl. 164-130.000.

Bullock, Joseph J., III, to Three Sisters Ranch Enterprises. Cap and neck structure for a wide-mouth jar. 4,438,857, Cl. 215-256.000.

Bunger, Dennen J., to Bendix Corporation, The. Variable displacement vane pump. 4,439,117, Cl. 418-22.000.

Bunzl, Helmut H., to AG fur Turautomaten. Balanced sliding door structure. 4,438,594, Cl. 49-177.000.

Burandt, Corliss O., to Investment Rarities, Incorporated. Apparatus and timing mechanism for controlling the valve operation of an internal combustion engine. 4,438,735, Cl. 123-90.160.

Burandt, Corliss O., to Investment Rarities, Incorporated. Apparatus and method for controlling the valve operation of an internal combustion engine. 4,438,737, Cl. 123-90.170.

Burg, Richard E.: *See*—
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.

Burgstaller, Gottfried: *See*—
Kuhls, Jurgen; Weiss, Eduard; and Burgstaller, Gottfried, 4,439,385, Cl. 264-37.000.

Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., to Outboard Marine Corporation. Outboard motor with interlock mechanism for transmission and for starting mechanism. 4,439,163, Cl. 440-86.000.

Burns, Michael E., to Procter & Gamble Company, The. Concentrated fabric softening compositions. 4,439,335, Cl. 252-8.750.

Burroughs Corporation: *See*—
Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., 4,438,698, Cl. 101-287.000.

Burton, Lester P. J.; and Shubkin, Ronald L., to Ethyl Corporation. Process for sulfonating impure ortho alkylphenol. 4,439,374, Cl. 260-512.00R.

Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, to Bayer Aktiengesellschaft. Process for the production of blocked compounds optionally containing free hydroxyl groups and their use for the production of polyurethanes. 4,439,591, Cl. 528-73.000.

Busko-Oszczopowicz, Irena M.: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Busse, Thomas A.: *See*—
Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., 4,439,163, Cl. 440-86.000.

Butler Manufacturing Company: *See*—
Nesseth, Clinton A.; and Nesseth, Clifford B., 4,439,115, Cl. 417-460.000.

Butterfield Group: *See*—
Butterfield, Ida M., 4,439,187, Cl. 604-111.000.

Butterfield, Ida M., to Butterfield Group. Hypodermic syringe. 4,439,187, Cl. 604-111.000.

Butterwick, Gilbert N., to RCA Corporation. Anode structure for photomultiplier tube. 4,439,712, Cl. 313-533.000.

Buttiker, Urs, to Rolf Baumgartner AG. Screw mixer. 4,439,044, Cl. 366-292.000.

Byrd, Norman R., to McDonnell Douglas Corporation. Treatment of metals to enhance adhesive bonding. 4,439,282, Cl. 204-38.00R.

Byvik, Charles E.: *See*—
Reichman, Benjamin; and Byvik, Charles E., 4,439,301, Cl. 204-278.000.

C. K. Locks Limited: *See*—
Stearns, Chris, 4,438,965, Cl. 292-256.750.

C. M. Kemp Manufacturing Co., The: *See*—
Frey, Bill; Haynie, Mark; and Psaras, John, 4,439,213, Cl. 55-31.000.

C. R. Bard, Inc.: *See*—
Bowers, William J., 4,438,766, Cl. 128-303.140.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederick W., 4,439,736, Cl. 324-437.000.

Cabot Corporation: *See*—
Herchenroeder, Robert B.; and Lai, George Y., 4,439,248, Cl. 148-6.200.

Cahill, Lysle D., to Coulter Systems Corporation. Binary scan system. 4,439,789, Cl. 358-256.000.

Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John. Touchpad keyboard. 4,439,647, Cl. 200-5.00A.

Calas, Bernard: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.

Caldecourt, Victor J.: *See*—
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.

Calgon Corporation: *See*—
Schaper, Raymond J., 4,439,580, Cl. 524-801.000.
Sinha, Rabindra K., 4,439,351, Cl. 252-500.000.

California Institute of Technology: *See*—
Cocconi, Alan G., 4,439,822, Cl. 363-56.000.

Cameron, Thomas M.: *See*—
Anderson, Rodney H.; and Cameron, Thomas M., 4,439,089, Cl. 414-722.000.

Campanella, Alexander F.; and Bannon, J. David. Protective glove. 4,438,532, Cl. 2-16.000.

Campbell, Patrick J. Moisture and density gauge. 4,439,675, Cl. 250-253.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Meek, Larry F., 4,438,650, Cl. 73-432.0SD.
Smyth, Lawrence C.; and Lightstone, Alexander W., 4,439,221, Cl. 65-4.210.

Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., to Energy Conversion Devices, Inc. Multiple chamber deposition and isolation system and method. 4,438,723, Cl. 118-718.000.

Canon Kabushiki Kaisha: *See*—
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.
Ito, Yuji, 4,439,024, Cl. 351-207.000.
Okajima, Hidekazu; and Tsuji, Sadahiko, 4,439,018, Cl. 350-430.000.
Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, 4,439,258, Cl. 156-86.000.
Yamaguchi, Shin, 4,439,017, Cl. 350-427.000.
Yoshida, Tadashi, 4,439,790, Cl. 358-256.000.

Canterino, Peter J.; and Allen, Craig E., to Mobil Oil Corporation. Method and apparatus for forming cross-laminated thermoplastic film. 4,439,260, Cl. 156-259.000.

Cantley, Richard E. Combination door lock and alarm. 4,439,758, Cl. 340-546.000.

Capano, Michele: *See*—
Tomaiuolo, Francesco; and Capano, Michele, 4,439,338, Cl. 252-79.100.

Cappelletti, Leonardo M.: *See*—
Toscano, Luciano; and Cappelletti, Leonardo M., 4,439,426, Cl. 424-181.000.

Capro, Inc.: *See*—
Carlson, John A., 4,438,658, Cl. 74-501.00R.

Carey, Roberta B.: *See*—
Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.

Carignan, Roger G.: *See*—
Pratt, Clyde R.; and Carignan, Roger G., 4,438,769, Cl. 128-334.00R.

Carlson, John A., to Capro, Inc. Engine throttle control. 4,438,658, Cl. 74-501.00R.

Carminati, Paolo: *See*—
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.

Carpenter, Aaron R.; and Bagby, Robert R. Bark tool and connection. 4,438,794, Cl. 144-208.00E.

Carpenter, Richard H.: *See*—
Jarrell, Donald, 4,439,317, Cl. 210-151.000.

Carr, Ian. Game ball. 4,438,924, Cl. 273-58.00B.

Carrier Corporation: *See*—
Mathur, Achint P.; Torniainen, Matti J.; and Shawcross, James P., 4,438,807, Cl. 165-133.000.

Carroll, Glenn G.; and Frank, Joseph C., to Alcolite Products Corp. Clamping & sealing system for flanged ducts. 4,438,960, Cl. 285-367.000.

Carstensen, Carsten A.: *See*—
Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.

Carter, James L.; and Barnett, Allan E., to Exxon Research and Engineering Co. Support cobalt-silica coprecipitated hydrogenation catalyst. 4,439,544, Cl. 502-234.000.

Caterpillar Tractor Co.: *See*—
Saban, C. John, 4,438,646, Cl. 73-105.000.
Suckow, David S., 4,438,797, Cl. 152-410.000.

Cato, Craig J.: *See*—
Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,439,161, Cl. 434-201.000.

Cecchi, Marino, to Suncom, Incorporated. Joy stick switch. 4,439,649, Cl. 200-6.00A.

Cecchin, Giuliano; and Albizzati, Enrico, to Montedison S.p.A. Catalysts and components of catalysts for polymerizing olefins. 4,439,540, Cl. 502-125.000.

Cech, Jay M.: *See*—
Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., 4,439,500, Cl. 429-27.000.

Ceintrey, Claude, to La Cellophane. Chromogenic compositions containing stabilized phenolic coupler compounds, recording materials and processes utilizing same. 4,439,512, Cl. 430-180.000.

Celanese Corporation: *See*—
Hall, Henry K., Jr.; and Padias, Anne B., 4,439,597, Cl. 528-272.000.
Hanson, Harry T., 4,439,590, Cl. 526-285.000.
Kim, Sang N.; and Kastelic, John R., 4,439,578, Cl. 524-538.000.
McNew, George L.; and Thomas, Norman W., 4,438,593, Cl. 47-57.600.

Central Glass Company Limited: *See*—
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,439,222, Cl. 65-99.200.

Centronics Data Computer Corp.: *See*—
Johnson, Jerome L., 4,439,775, Cl. 346-75.000.

Ceresa, Luciano: *See*—
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.

Cernigliaro, George J.; and Shipley, Charles R., to Shipley Company Inc. High temperature positive diazo photoresist processing using polyvinyl phenol. 4,439,516, Cl. 430-325.000.

Ceshkovsky, Ludwig; and Dakin, Wayne R., to Discovision Associates. Focusing system for video disc player. 4,439,848, Cl. 369-45.000.

Ceskoslovenska akademie ved.: *See*—
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.

Chamberlain, Joseph G.; and Tiegs, Paul E., to Chamberlain, Joseph G. Apparatus and method for accomplishing efficient burning of biomass fuel materials. 4,438,756, Cl. 126-131.000.

Chan, Rebecca: *See*—
Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., 4,439,614, Cl. 560-8.000.

Chancey, Roger D.: *See*—
Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.

Chang, Laurence W.: *See*—
Singh, Balwant; Chang, Laurence W.; and Forgione, Peter S., 4,439,616, Cl. 560-25.000.

Chang, Long F., to Owens-Illinois, Inc. Combination base cup and bottle. 4,438,856, Cl. 215-12.00R.

Chapel, Nimrod T. Apparatus for removing material. 4,438,977, Cl. 299-64.000.

Chapman, Thomas G., to General Electric Company. Impregnated capacitor foil. 4,439,812, Cl. 361-314.000.

Chardon, Andre-Marie; and Guibert, Philippe. Shelter for protecting large-size objects. 4,438,606, Cl. 52-79.100.

Chasar, Dwight W., to B. F. Goodrich Co., The. 5-Membered cyclic phosphonates and compositions thereof. 4,439,564, Cl. 524-101.000.

Chatterjea, Probir K., to Dresser Industries, Inc. Clutch-clutch-brake steering mechanism for tractors. 4,438,780, Cl. 137-625.600.

Chazenfus, Henri. Circuit for the control of the cyclic ratio of a periodic pulse signal and device multiplying by 2^n of a pulse signal frequency incorporating said control circuit. 4,439,689, Cl. 307-265.000.

Chedeville, Robert: *See*—
Bernard, Alain; and Chedeville, Robert, 4,438,612, Cl. 52-427.000.

Cheever, Richard N., to Tetra Pak Developpement Ltd. Electron beam-irradiating apparatus with conical bushing seal-support. 4,439,686, Cl. 250-492.300.

Chelak, Viktor G.: *See*—
Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., 4,439,702, Cl. 310-80.000.

Chem Systems Inc.: *See*—
Greene, Marvin I.; and Gelbein, Abraham P., 4,439,309, Cl. 208-51.000.

Chemical Research & Licensing Company: *See*—
Jones, Edward M., Jr., 4,439,350, Cl. 502-527.000.

Chen, Albert C.: *See*—
Martinez, Carlos J.; and Chen, Albert C., 4,439,587, Cl. 525-292.000.

Chen, Der-Jong. Linear sliding motor device. 4,439,698, Cl. 310-12.000.

Cheney, Robert J., Jr., to Eldec Corporation. Differential mass flowmeter. 4,438,648, Cl. 73-195.000.

Cheng, Hsiao L.: *See*—
Liang, Anthony; and Cheng, Hsiao L., 4,439,468, Cl. 427-216.000.

Cheng, Paul J.; and Mills, King L., to Phillips Petroleum Company. Apparatus for producing carbon black. 4,439,400, Cl. 422-111.000.

Chesebrough-Pond's Inc.: *See*—
Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, 4,439,190, Cl. 604-319.000.

Cheung, William S. H. Vehicle ignition system. 4,438,752, Cl. 123-630.000.

Chevron Research Company: *See*—
Elson, Thomas D.; and Millhone, Ralph S., 4,438,815, Cl. 166-278.000.

Chiang, Chih S., to Du Pont de Nemours, E. I., and Company. Chlorination of hydroquinone. 4,439,595, Cl. 528-191.000.

Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, to SANOFI. Naftidrofuryl citrate and therapeutic applications. 4,439,442, Cl. 424-285.000.

Chisso Corporation: *See*—
Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, 4,439,340, Cl. 252-299.630.

Chiusoli, Gian P.: *See*—
Cometti, Giuseppe; and Chiusoli, Gian P., 4,439,618, Cl. 560-56.000.

Christ, Bernhard: *See*—
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Christy, Marcia E.: *See*—
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.

Christy, Orrin D., to United States of America, Army. Dual-secondary mirror cassegrain optical system. 4,439,012, Cl. 350-294.000.

Chu, Alan K. P., to Atlantic Richfield Company. Raney nickel electrode for Ni-H_2 cell. 4,439,466, Cl. 427-123.000.

Chu, Ta-Shing, to Bell Telephone Laboratories, Incorporated. Compact scanning beam antenna feed arrangement. 4,439,773, Cl. 343-778.000.

Chueh, Richard J., to Control Data Corporation. Computer system key and lock protection mechanism. 4,439,830, Cl. 364-200.000.

Chvojcsek, Frank, to Stenograph Corporation. Referencing device for digital data recorders. 4,439,798, Cl. 360-4.000.

Ciba-Geigy AG: *See*—
Freeman, Barrie A., 4,439,033, Cl. 354-316.000.

Ciba-Geigy A.G.: *See*—
Postle, Stephen R., 4,439,518, Cl. 430-402.000.

Ciba-Geigy Corporation: *See*—
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,228, Cl. 71-95.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,230, Cl. 71-96.000.
Hubele, Adolf, 4,439,447, Cl. 424-309.000.
Irving, Edward; and Green, George E., 4,439,291, Cl. 204-159.230.
Irving, Edward, 4,439,517, Cl. 430-328.000.
Kleiner, Eduard K.; and Falk, Robert A., 4,439,329, Cl. 252-8.050.
Lauton, Alain; and Wurmli, Albert, 4,439,201, Cl. 8-436.000.
Marfurt, Hans-Rudolf; and Zurer, August, 4,439,290, Cl. 204-149.000.
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, 4,439,615, Cl. 560-15.000.
Stingelin, Willy; and Loew, Peter, 4,439,204, Cl. 8-497.000.
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, 4,439,565, Cl. 524-103.000.

Cieslak, Jerzy J.: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Cimochowski, Anthony E.; and Heffelmire, Brad A., to Manville Service Corporation. Apparatus for forming thermal insulation blocks. 4,439,175, Cl. 493-413.000.

Cincinnati Milacron Inc.: *See*—
Kamman, Joseph T.; and Kohring, Mark D., 4,438,599, Cl. 51-238.00S.

Claflin, Warren E.: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Clark, Alan C.: *See*—
Higgins, William A.; and Clark, Alan C., 4,439,594, Cl. 528-89.000.

Claussen, Ulf, to Siemens Aktiengesellschaft. Evaluation circuit for a digital tachometer. 4,439,729, Cl. 324-165.000.

Claydon, Gyongyver; and Iles, Gordon D., to Marconi Company Limited, The. Apparatus and method for processing television picture signals and other information. 4,439,786, Cl. 358-148.000.

Clean-Tex: *See*—
Lang, Aage, 4,439,475, Cl. 428-92.000.

Clonce, Ambrose J.: *See*—
Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., 4,439,278, Cl. 203-9.000.

Close, Anthony D.; and Menn, Walter A., to International Telephone and Telegraph Corporation. Printed circuit assembly for a card file packaging system. 4,439,815, Cl. 361-386.000.

Coan, Michael H.; and Brockway, William J., to Miles Laboratories, Inc. Method of preparing alpha-1-proteinase inhibitor. 4,439,358, Cl. 260-112.00B.

Coca-Cola Company, The: *See*—
Puri, Ajai, 4,439,458, Cl. 426-330.500.

Cocchi, Maurice. Crystallographically-oriented spatially-dispersed conductive fiber electrode. 4,439,303, Cl. 204-434.000.

Cocconi, Alan G., to California Institute of Technology. Method and apparatus for detecting and preventing impending magnetic saturation in magnetic materials. 4,439,822, Cl. 363-56.000.

Codd, Edwin T. Space frames. 4,438,616, Cl. 52-650.000.

Codex Corporation: *See*—
Qureshi, Shahid U. H., 4,439,864, Cl. 375-98.000.

Coldren, Larry A.; and Stulz, Lawrence W., to Bell Telephone Laboratories, Incorporated. Orientation of INP substrate wafers. 4,439,268, Cl. 156-626.000.

Coleco Industries, Inc.: *See*—
Reiner, Norbert L.; and Sledesky, Stephen M., 4,439,648, Cl. 200-6.00A.

Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., to Hughes Aircraft Company. Real-time ordinal-value filters utilizing partial intra-data comparisons. 4,439,840, Cl. 364-900.000.

Coleman, James H., to Upjohn Manufacturing Company M. The. Treatment of the blood-brain barrier with ibuprofen. 4,439,450, Cl. 424-317.000.

Coleman, James H., to Upjohn Company, The. Treatment of the blood-brain barrier with flurbiprofen. 4,439,451, Cl. 424-317.000.

Colgate-Palmolive Company: *See*—
Cordon, Martin; and Dillarstone, Alan, 4,439,416, Cl. 424-47.000.
Kenkare, Divaker B., 4,439,355, Cl. 252-541.000.

Collins, Billy J. Method of constructing shell-formed structures. 4,439,383, Cl. 264-32.000.

Columbus, Richard L., to Eastman Kodak Company. Clustered ingress apertures for capillary transport devices and method of use. 4,439,526, Cl. 436-180.000.

Colvin, Warren: *See*—
Khanna, Pyare; and Colvin, Warren, 4,439,356, Cl. 260-112.00R.

Comaty, Joseph E.: *See*—
Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., 4,439,452, Cl. 424-319.000.

Combustion Engineering, Inc.: *See*—
Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., 4,438,709, Cl. 110-347.000.
Perryman, John W., 4,439,216, Cl. 55-104.000.
Rowe, George H., 4,438,630, Cl. 60-676.000.

Comeau, Paul E., to Kenney Manufacturing Company. Tear starting mechanism for tear shades. 4,438,799, Cl. 160-263.000.

Cometti, Giuseppe; and Chiusoli, Gian P., to Montedison S.p.A. Process for the preparation of methyl esters of arylpropionic acids optically active. 4,439,618, Cl. 560-56.000.

Commander Electrical Materials, Inc.: *See*—
Solek, Leszek, 4,438,859, Cl. 220-3.200.

Commonwealth Scientific and Industrial Research Organization: *See*—
Harrison, Alexander, 4,439,731, Cl. 324-239.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Michel, Helle, 4,439,671, Cl. 235-449.000.

Concord Laboratories, Inc.: *See*—
Wheeler, Robert P., 4,439,184, Cl. 604-90.000.

Congdon, Jon M., to PEDCO. Portable camera support. 4,439,032, Cl. 354-293.000.

Conn, Worth R., to Detectors, Inc. Tilt detector. 4,438,720, Cl. 116-215.000.

Conoco Inc.: *See*—
Lancet, Michael S., 4,439,210, Cl. 48-202.000.
Sudbury, John D.; and Zielke, Clyde W., 4,439,304, Cl. 208-8.0LE.

Constapel, Artur. Continuous gallery construction, in particular for underground mine tunnels. 4,439,065, Cl. 405-151.000.

Container Corporation of America: *See*—
Helms, Charles R., 4,438,864, Cl. 220-265.000.
Montealegre, James; and Rader, James L., 4,438,848, Cl. 206-588.000.

Continental Group, Inc., The: *See*—
Holk, Albert J.; and Pulciani, Sam C., 4,439,081, Cl. 413-1.000.

Control Data Corporation: *See*—
Chueh, Richard J., 4,439,830, Cl. 364-200.000.

Conway, George E., to Beckman Instruments, Inc. Rotor bucket liner. 4,439,177, Cl. 494-20.000.

Cook, P. Dan, to Warner-Lambert Company. 7-β-D-Arabinofuranosyl-7H-pyrrolo[2,3-d]pyrimidine compounds and methods for their production. 4,439,604, Cl. 536-24.000.

Cooper, David G.; and Sach, George S., to Smith Kline & French Laboratories Limited. Pyridines. 4,439,609, Cl. 546-334.000.

Cooper, Edwin: *See*—
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

Cooper Industries, Inc.: *See*—
Ford, James A.; and Haarer, Steven R., 4,438,798, Cl. 160-126.000.

Cooper LaserSonics: *See*—
Mohler, Galen E., 4,439,862, Cl. 372-107.000.

Cooper, Roderick A. Toe binding for skis. 4,438,947, Cl. 280-615.000.

Copeland, Claude T.: *See*—
Nimerick, Kenneth H.; and Copeland, Claude T., 4,439,337, Cl. 252-70.000.

Corbett, James P. Oscillating crystal transducer systems with symmetrical temperature compensator. 4,439,705, Cl. 310-338.000.

Corbett, Scott S., Jr.: *See*—
Riley, Joseph L., 4,439,094, Cl. 414-786.000.

Cordon, Martin; and Dillarstone, Alan, to Colgate-Palmolive Company. Self-heating shaving composition. 4,439,416, Cl. 424-47.000.

Corning Glass Works: *See*—
Araujo, Roger J., 4,439,528, Cl. 501-32.000.

Coscia, Anthony T.: *See*—
Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., 4,439,332, Cl. 252-8.55D.

Cosden Technology, Inc.: *See*—
McCurdy, J. L.; and Jarvis, Marvin A., 4,439,601, Cl. 528-481.000.
Schwarz, Richard A., 4,439,490, Cl. 428-407.000.

Coulter Systems Corporation: *See*—
Cahill, Lysle D., 4,439,789, Cl. 358-256.000.

Courdent, Jacques: *See*—
Hennart, Claude; and Courdent, Jacques, 4,439,415, Cl. 424-16.000.

Courtaulds Limited: *See*—
Betts, Max W., 4,438,639, Cl. 66-64.000.

Courty, Aurele. Manual pipe cutter. 4,438,562, Cl. 30-99.000.

Couture, William F., to Iowa Beef Processors, Inc. Head holding method and apparatus for a hide puller. 4,438,546, Cl. 17-50.000.

Couturier S.A.: *See*—
Bernard, Alain; and Chedeville, Robert, 4,438,612, Cl. 52-427.000.

Cox, John M., to Imperial Chemical Industries PLC. Herbicide. 4,439,428, Cl. 424-200.000.

CPC Engineering Corporation: *See*—
Blais, Norman J., 4,439,325, Cl. 210-740.000.

Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., to Aqua-Chem, Inc. Combustion control apparatus. 4,439,138, Cl. 431-12.000.

Creamer, Reginald D. Pump jack drive apparatus. 4,438,628, Cl. 60-374.000.

Cremer, Gottfried. Cooling zone for a firing kiln with transport rollers. 4,439,142, Cl. 432-18.000.

Cristell, Frank A.: *See*—
Fisher, Richard W.; and Cristell, Frank A., 4,438,995, Cl. 339-39.000.

Crosfield Electronics Limited: *See*—
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Crothers, James L.: *See*—
Weirich, Stephen; and Crothers, James L., 4,438,671, Cl. 83-212.000.

Crotti, Alfred F. Removal of oil from water. 4,439,324, Cl. 210-691.000.

Cukauskas, Edward J., to United States of America, Navy. Method for making Josephson junctions with contamination-free interfaces utilizing a ZnO contact insulator. 4,439,269, Cl. 156-643.000.

Cullen, Frederick T. Hand protector. 4,438,661, Cl. 74-551.900.

Cullom Machine Tool & Die, Inc.: *See*—
Dickhut, Heinrich; and Lilienthal, Alfred, 4,439,130, Cl. 425-388.000.

Cummins Engine Company, Inc.: *See*—
Wohlmuth, Clinton J., 4,438,598, Cl. 51-165.730.

Curley, James H.; and Lang, Roger J., to Allied Corporation. IDC Socket connector. 4,439,001, Cl. 339-176.0MP.

Curry, Thomas H., to Albany International Corp. Wet press felt for papermaking machine. 4,439,273, Cl. 162-358.000.

Curtis, David S.: *See*—
Jones, Thomas J.; and Curtis, David S., 4,438,956, Cl. 285-223.000.

Curtis, Stanley F., to Pollution Controls Industries, Inc. Assembly for mounting a work object on a vehicle or the like. 4,438,945, Cl. 280-501.000.

Cuscurida, Michael: *See*—
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., 4,439,551, Cl. 521-131.000.

CVI Incorporated: *See*—
Sarcia, Domenico S., 4,438,631, Cl. 62-6.000.

Czyzewski, Ted S.; and Greenwell, Bartley A., to Groen Division - Dover Corporation. Process for chilling and plasticizing fatty materials. 4,439,461, Cl. 426-601.000.

D. W. Zimmerman Mfg., Inc.: *See*—
Owen, Douglas B., 4,439,113, Cl. 417-394.000.

Dahlgren, William V., Jr.; and Silverstein, Lewis S. Tool manipulating method and apparatus. 4,439,834, Cl. 364-474.000.

Daicel Chemical Industries, Ltd.: *See*—
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, 4,439,605, Cl. 536-71.000.

Daido Metal Company Ltd.: *See*—
Mori, Sanae, 4,439,484, Cl. 428-318.400.

Daido Oxygen Company Ltd.: *See*—
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.

Daieigiken, Inc.: *See*—
Watanabe, Hidefumi, 4,439,124, Cl. 425-112.000.

Daigo, Junichi: *See*—
Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, 4,439,797, Cl. 360-134.000.

Daimler-Benz Aktiengesellschaft: *See*—
Lutz, Horst, 4,438,645, Cl. 72-482.000.
Renz, Dieter; and Loper, Bernd, 4,438,979, Cl. 301-37.0PB.
Seifert, Peter R., 4,438,732, Cl. 123-41.050.

Dakin, Wayne R.: *See*—
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,439,848, Cl. 369-45.000.

Daloz, Joanny, to SEB S.A. Appliance for preparing mayonnaise or similar emulsions. 4,439,043, Cl. 366-164.000.

Damen, Franciscus A., to Flessluittechniek B. V. Handelend Onder De Naam Calumatic. Apparatus for selecting closures. 4,438,840, Cl. 198-398.000.

Danfoss A/S: *See*—
Petersen, Hans C.; and Sorensen, Soren N., 4,439,119, Cl. 418-61.00B.

Daniel, Arnold D.: *See*—
Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., 4,439,200, Cl. 406-99.000.

Daniel, Chelliah, to Ashland Oil, Inc. Oxydehydrogenation process. 4,439,621, Cl. 562-599.000.

Daniel, Jean-Claude: *See*—
Schuppiser, Jean-Luc; and Daniel, Jean-Claude, 4,439,574, Cl. 524-458.000.

Daniels, Raymond A., to International Business Machines Corporation. Method and apparatus for purging a copier developer. 4,439,034, Cl. 355-3.0DD.

Dart Industries Inc.: *See*—
Ashton, Harold P., 4,438,564, Cl. 30-324.000.

Darton, Richard C.: *See*—
Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, 4,439,306, Cl. 208-11.00R.

Date, Naoki: *See*—
Norioka, Setsuo; and Date, Naoki, 4,439,681, Cl. 250-310.000.

Daugherty, Don D. Paddle wheel kit for pontoon boat. 4,439,164, Cl. 440-91.000.

Daunis, Jacques: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.

Davenport, Joseph A.: *See*—
Raith, Richard L.; and Davenport, Joseph A., 4,438,614, Cl. 52-580.000.

Davis, Harry H., to L. B. (Plastics) Limited. Drawers and drawer runners. 4,438,994, Cl. 312-330.00R.

Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., to Mead Corporation, The. Large document access for a scanning system of a copying machine. 4,439,036, Cl. 355-75.000.

Davis, Roland O., to Santa Barbara Research Center. Low friction pivot. 4,438,983, Cl. 308-2.00A.

Davydenko, Vladimir G.: *See*—
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., to SRI International. 5,6-Methano-5,6-dihydroretinoids. 4,439,614, Cl. 560-8.000.

DBI Industries, Inc.: *See*—
Hussels, Bernard H.; and Goetz, Charles T., 4,438,823, Cl. 177-210.0EM.

DCI Marketing: *See*—
Rabas, Kenneth J., 4,438,993, Cl. 312-140.000.

De La Rue Systems Limited: *See*—
Jenkins, Stuart M.; and Hosking, Steven M., 4,439,083, Cl. 414-46.000.

Dean, Robert A.: *See*—
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.

De Cenzo, Herbert A. Clam-shell coupling for joining beaded tubes. 4,438,958, Cl. 285-234.000.

Deckebach, George J. Recuperative double chamber rotary furnace. 4,439,141, Cl. 432-14.000.

Decoustics Limited: *See*—
Hintsa, Roy A.; and Orav, Tonu, 4,438,613, Cl. 52-484.000.

Dedolph, Richard R., to Gravi-Mechanics Co. Method of preparing a urethane prepolymer and polymer. 4,439,552, Cl. 521-159.000.

Deepsea Ventures, Inc.: *See*—
Latimer, John P., 4,438,902, Cl. 254-106.000.

Deere & Company: *See*—
Kittle, Carl E., 4,438,660, Cl. 74-531.000.
Nobis, Dieter, 4,438,657, Cl. 74-477.000.
Treichel, Richard; and Moon, Seaton, 4,438,818, Cl. 172-9.000.

deha Baubedarf GmbH & Co. KG: *See*—
Bakk, Thorleif; and Bakk, Henry, 4,439,067, Cl. 405-154.000.

De Jong, Hendrik J., to N.V. Nederlandsche Apparatenfabriek Nedap. Attachment device. 4,438,642, Cl. 70-232.000.

Delaplace, Lucien; and Robert, Jacques, to Stein Industrie. Apparatus for directly igniting low-grade solid fuel powders in cold combustion chambers. 4,438,707, Cl. 110-264.000.

Delgado, Daniel R.: *See*—
Lannom, Charles S.; and Delgado, Daniel R., 4,438,602, Cl. 51-277.000.

Della-Moretta, Leonard B. Towing and carrying systems. 4,438,944, Cl. 280-460.00R.

Delta Central Refining, Inc.: *See*—
O'Blasny, Richard H., 4,439,311, Cl. 208-179.000.

Deltour, Robert J.: *See*—
Alldredge, Robert L.; and Deltour, Robert J., 4,438,842, Cl. 198-838.000.

DeLucia, Paul V. Continuous, moveable thermal barrier system. 4,438,605, Cl. 52-71.000.

de Mendez, Michel O.: *See*—
Amberny, Philippe; and de Mendez, Michel O., 4,439,674, Cl. 250-227.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.

Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., to Baxter Travenol Laboratories, Inc. Tube connector. 4,439,188, Cl. 604-283.000.

Dentsply Research & Development Corp.: *See*—
Williams, Ralph J., 4,438,975, Cl. 297-412.000.

Derderian, Edward J. Box-erecting machine. 4,439,174, Cl. 493-125.000.

Desplats, Andre, to Tractel S.A. Release mechanism for a traction apparatus acting on a cable which passes therethrough. 4,438,659, Cl. 74-529.000.

Dessouroux, Alexis A. J. F., to Shur-Lok International SA. Assembly sleeve for fixing a screw in an object, particularly of a soft material. 4,439,078, Cl. 411-178.000.

Detectors, Inc.: *See*—
Conn, Worth R., 4,438,720, Cl. 116-215.000.

Deutsche Automobilgesellschaft: *See*—
Schneider, Claus; and Benczur-Urmossy, Gabor, 4,439,281, Cl. 204-2.100.

Develay, Roger; and Anagnostidis, Marc, to Societe Metallurgique de Gerzat. Method of making hollow bodies under pressure from aluminum alloys. 4,439,246, Cl. 148-2.000.

Devincenzo, John. Vertically-indexed posterior bite plates. 4,439,149, Cl. 433-6.000.

De Vries, Hans: *See*—
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,439,287, Cl. 204-58.000.

DeYoung, Thomas W.; and Maltsev, Viacheslav B., to Exxon Research and Engineering Co. Ink jet apparatus with improved transducer support. 4,439,780, Cl. 346-140.00R.

Dholakia, Anil R., to RCA Corporation. Capacitive playback stylus. 4,439,853, Cl. 369-126.000.

Dholakia, Anil R., to RCA Corporation. Capacitive playback stylus. 4,439,855, Cl. 369-126.000.

Dickhut, Heinrich; and Lilienthal, Alfred, to Cullom Machine Tool & Die, Inc. Plastic tile corrugator. 4,439,130, Cl. 425-388.000.

Didier Engineering GmbH: *See*—
Galow, Manfred, 4,439,276, Cl. 202-239.000.

Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, to Firestone Tire & Rubber Company, The. Adjustable die mechanism. 4,439,125, Cl. 425-140.000.

Diesel Kiki Co., Ltd.: *See*—
Ohie, Tomonori, 4,439,116, Cl. 417-499.000.

Dietrich, Herbert, to Pfaff Industriemaschinen GmbH. Fur sewing machine. 4,438,711, Cl. 112-16.000.

DiFoggio, Rocco, to Shell Oil Company. Ultrasonic sound absorber. 4,439,497, Cl. 428-539.500.

DiGiulio, Adolph V., to Atlantic Richfield Company. Anti-lumping and fast-cool vinyl aromatic expandable polymer particles. 4,439,547, Cl. 521-56.000.

Dijkmans, Eise C.: *See*—
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.

Dillarstone, Alan: *See*—
Cordon, Martin; and Dillarstone, Alan, 4,439,416, Cl. 424-47.000.

Dimmick, Floyd E. Method for restoring an underwater piling and an underwater jacket used therewith. 4,439,070, Cl. 405-216.000.

Dimodana, Robert: *See*—
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

Discovision Associates: *See*—
Ceshkovsky, Ludwig; and Dakin, Wayne R., 4,439,848, Cl. 369-45.000.
Morrison, Rocky V., 4,439,132, Cl. 425-548.000.

Diving Unlimited International, Inc.: *See*—
Long, Richard W.; and Stinton, Robert T., 4,438,531, Cl. 2-2.10R.

Dix, Kurt E. Coke-oven door with Z-profile sealing frame. 4,439,277, Cl. 202-248.000.

Dobrzanski, John J., to General Signal Corporation. Ionization smoke detector. 4,439,683, Cl. 250-381.000.

Dr. Madaus & Co.: *See*—
Hotzel, Dieter, 4,439,449, Cl. 424-317.000.

Dr. Muller AG: *See*—
Muller, Hans, 4,439,327, Cl. 210-772.000.

Doddapaneni, Narayan, to Honeywell Inc. Metal-organic liquid depolarizer electrochemical cell. 4,439,503, Cl. 429-108.000.

Doddi, Namassivaya: *See*—
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.

Doddington, George: *See*—
Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,439,161, Cl. 434-201.000.

Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., to Energy Conversion Devices, Inc. Grooved gas gate. 4,438,724, Cl. 118-719.000.

Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, to Nippon Oil and Fats Co., Ltd.; and Denki Kagaku Kogyo Kabushiki Kaisha. Antifouling composition. 4,439,555, Cl. 523-122.000.

Doi, Hiroyuki: *See*—
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.

Dokoupil, Jiri. System for drying and expanding of flat materials such as leather. 4,438,570, Cl. 34-1.000.

Doliner, Herbert, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Rotary sheet printing machine. 4,438,697, Cl. 101-183.000.

Dominey, Raymond N.: *See*—
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Don Brothers, Buist P.L.C.: *See*—
Guild, George A., 4,439,476, Cl. 428-96.000.

Don Evans, Inc.: *See*—
Evans, Donald L., 4,438,852, Cl. 211-11.000.

Donaldson Company, Inc.: *See*—
Brenholt, David L., 4,438,781, Cl. 137-625.280.

Donnan, Robert A., to International Business Machines Corp. Method and system for retransmitting incorrectly received numbered frames in a data transmission system. 4,439,859, Cl. 371-32.000.

Donner, Meinrad, to Maag Gear-Wheel & Machine Company Limited. Position regulation system containing a digital incremental measuring apparatus. 4,439,825, Cl. 364-167.000.

Dooley, Dan W.; and Bromps, Robert T. Dispensing apparatus. 4,438,872, Cl. 222-217.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.

Doty, James L., to Spectron Development Laboratories, Inc. Apparatus for combining optical images. 4,439,010, Cl. 350-174.000.

Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, to International Business Machines Corporation. Thin film discrete decoupling capacitor. 4,439,813, Cl. 361-321.000.

Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., to Eastman Kodak Company. Process inhibitor for readily polymerizable ethylenically unsaturated aromatic compounds. 4,439,278, Cl. 203-9.000.

Doumit, Carl J. Descaler composition and method. 4,439,339, Cl. 252-80.000.

Dow Chemical Company, The: *See*—
Henton, David E., 4,439,582, Cl. 525-67.000.
Nimerick, Kenneth H.; and Copeland, Claude T., 4,439,337, Cl. 252-70.000.
Reifschneider, Walter, 4,439,430, Cl. 424-216.000.
Reifschneider, Walter, 4,439,431, Cl. 424-216.000.
Strother, Greene W., Jr., 4,439,532, Cl. 501-117.000.
Thomas, Lowell S., 4,439,566, Cl. 524-108.000.
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.

Dow Corning Corporation: *See*—
Groenhof, Eugene D., 4,439,630, Cl. 174-21.00R.

Dowden, William, deceased; and by Muckelroy, Naomi, executrix. Hand operated controls for motor vehicle. 4,438,835, Cl. 192-3.00M.

Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., to KSM Fastening Systems Inc. Apparatus and method for double end stud welding. 4,439,661, Cl. 219-99.000.

Drabb, Thomas W., to American Cyanamid Company. Method for the preparation of certain pyridine and quinoline 2,3-dicarboxylic anhydrides. 4,439,607, Cl. 546-89.000.

Drackett Company, The: *See*—
Keyes, George B.; and Richards, Randall G., 4,438,534, Cl. 4-227.000.

Dragerwerk Aktiengesellschaft: *See*—
Eckstein, William; and Pantaleon-Stemberg, Gerd, 4,438,966, Cl. 292-259.00R.

Dragone, Corrado, to Bell Telephone Laboratories, Incorporated. Corrugated waveguide or feedhorn assembled from grooved pieces. 4,439,748, Cl. 333-239.000.

Dravo Corporation: *See*—
Jaquay, Louis H.; and Mengon, Albert C., deceased, 4,439,307, Cl. 208-11.00R.

Dresser Industries, Inc.: *See*—
Anderson, Rodney H.; and Cameron, Thomas M., 4,439,089, Cl. 414-722.000.
Chatterjea, Probir K., 4,438,780, Cl. 137-625.600.
Wilkinson, Gregory J., 4,438,810, Cl. 166-65.00M.

Dreulle, Noel. Process for adjusting the composition of a zinc alloy used in the galvanization of steel. 4,439,397, Cl. 420-519.000.

Drexel Equipment Limited: *See*—
Armell, Richard A., 4,438,938, Cl. 277-230.000.

Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, to Dreyfuss, Wilfried; and Remp, Thomas E. Protective device for pipes. 4,438,783, Cl. 138-89.000.

Drosen, Erich: *See*—
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.

Drummond, William E.: *See*—
Hesterman, Victor W.; and Drummond, William E., 4,439,732, Cl. 324-247.000.

Du, Mila T.; and Shepherd, Robert G., to American Cyanamid Company. Antiatherosclerotic 1-piperazinecarbonyl compounds. 4,439,606, Cl. 544-356.000.

Ducellier, Hugues, J. M., to Broderie de Mesnil St Pere S.A.R.L. Stitching head having two independent presser feet. 4,438,712, Cl. 112-100.000.

Duff, Russell E., to S-Cubed. Complete incineration of waste material. 4,438,708, Cl. 110-346.000.

Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., to Monsanto Company. Thermally stabilized polymers. 4,439,571, Cl. 524-183.000.

Duke, Roy B., to Marathon Oil Company. Demulsification of a crude oil middle phase emulsion. 4,439,345, Cl. 252-330.000.

Dunham-Bush, Inc.: *See*—
Shaw, David N., 4,439,121, Cl. 418-98.000.

Dunlop Limited: *See*—
Bell, Raymond W. H., 4,439,472, Cl. 428-71.000.

Dunn, William H.; Edwards, William J.; and Minalga, Philip F., to Singer Company, The. Buttonhole sewing repair. 4,438,715, Cl. 112-158.00B.

Duphar International Research B.V.: *See*—
van Hes, Roelof; and Grosscurt, Arnoldus C., 4,439,440, Cl. 424-273.00P.

Du Pont de Nemours, E. I., and Company: *See*—
Chiang, Chih S., 4,439,595, Cl. 528-191.000.
Ganci, James B., 4,439,240, Cl. 106-288.00Q.
Irwin, Robert S., 4,439,596, Cl. 528-191.000.
Jenninga, Uel D., 4,439,487, Cl. 428-397.000.
Johnson, Alexander L., 4,439,364, Cl. 260-239.30R.
Rao, Velliyur Nott M., 4,439,625, Cl. 568-473.000.

Durable Packaging Corporation: *See*—
Ulrich, Lawrence W.; and Walker, Connie W., 4,438,617, Cl. 53-137.000.

Durkan, Martin J., Jr. Stadium seating. 4,438,603, Cl. 52-8.000.

Dyckerhoff & Widmann Aktiengesellschaft: *See*—
Finsterwalder, Ulrich, 4,438,719, Cl. 114-74.00A.

Dyett, Derek H.; and Harvey, Rex, to Molins Limited. Cigarette conveying drums. 4,438,774, Cl. 131-282.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Fischer, Klaus H.; and Kroschel, Heinz, 4,438,675, Cl. 89-1.811.

Dynascan Corporation: *See*—
Schornack, Louis W., 4,439,688, Cl. 307-115.000.

Eastman Kodak Company: *See*—
Columbus, Richard L., 4,439,526, Cl. 436-180.000.
Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., 4,439,278, Cl. 203-9.000.
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.
Perlstein, Jerome H.; and Haley, Neil F., 4,439,505, Cl. 430-58.000.
Sublett, Bobby J.; and Hilbert, Samuel D., 4,439,598, Cl. 528-295.300.

Eaton Corporation: *See*—
Lane, E. James, 4,438,666, Cl. 74-868.000.

Ebata, Yoshikazu: *See*—
Koide, Akio; and Ebata, Yoshikazu, 4,438,716, Cl. 112-168.000.

Ebneth, Harold; and Fitzky, Hans-Georg, to Bayer Aktiengesellschaft. Metallized sheet form textile microwave screening material, and the method of use. 4,439,768, Cl. 343-18.00B.

Ecanow, Bernard: *See*—
Ecanow, Charles S.; and Ecanow, Bernard, 4,439,424, Cl. 424-153.000.

Ecanow, Charles S.; and Ecanow, Bernard, to Neomed Inc. Synthetic whole blood. 4,439,424, Cl. 424-153.000.

Eckert, Josef, to Wischerath and Schreiner KG. Dispenser. 4,438,871, Cl. 222-137.000.

Eckstein, William; and Pantaleon-Stemberg, Gerd, to Dragerwerk Aktiengesellschaft. Lock for carrying cases of respirators. 4,438,966, Cl. 292-259.00R.

Edelbrock, Gregory J.: *See*—
Kelly, John, Jr.; and Edelbrock, Gregory J., 4,439,069, Cl. 405-195.000.

Edgren, David: *See*—
Swanson, David; and Edgren, David, 4,439,195, Cl. 604-890.000.

Edinen Centar Po Chimia: *See*—
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.

Edmonds, David H., to Garrett Corporation, The. Compressor inlet guide vane and vortex-disturbing member assembly. 4,439,104, Cl. 415-161.000.

Edstrom, John O.: *See*—
Santen, Sven; and Edstrom, John O., 4,439,410, Cl. 423-350.000.

Edwards, Raymond M. Envelope vending machine. 4,438,868, Cl. 221-240.000.

Edwards, William J.: *See*—
Dunn, William H.; Edwards, William J.; and Minalga, Philip F., 4,438,715, Cl. 112-158.00B.

Edwardson, Svante R., to AB Dentatus. Articulator for use in making dentures or parts thereof. 4,439,150, Cl. 433-56.000.

Eflab Oy: *See*—
Suovaniemi, Osmo A., 4,439,039, Cl. 356-416.000.

Eggert, Walter S., Jr., to Budd Company, The. Primary suspension system for a railway car. 4,438,703, Cl. 105-224.100.

Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., to Enrenpreis, Seymour. Class of analgesics and/or anti-inflammatory agents consisting of inhibitors of breakdown of endogenous enkephalin and/or endorphin, and combinations of said analgesics with antipyretic, anti-inflammatory (aspirin-type) drugs. 4,439,452, Cl. 424-319.000.

Eichenberger, Peter; and Lodge, John H., to Ford Motor Company. Planetary transmission gearing and output shaft retention means. 4,438,663, Cl. 74-760.000.

Eichentopf, Bertram: *See*—
Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, 4,439,357, Cl. 260-112.00B.

Einig, Joseph A.: *See*—
Jones, Johnnie; Einig, Joseph A.; and Ackerson, Arthur T., 4,438,596, Cl. 49-463.000.

Eisenstein, Toby K.: *See*—
Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.

Ejnar Jensen & Son A/S: *See*—
Jensen, Jorn M., 4,439,176, Cl. 493-419.000.

Eldec Corporation: *See*—
Cheney, Robert J., Jr., 4,438,648, Cl. 73-195.000.

Electric Power Research Institute, Inc.: *See*—
Gilman, Harris H., 4,438,649, Cl. 73-432.00R.

Electro-Films, Inc.: *See*—
Madden, Jean D., Jr., 4,439,754, Cl. 338-320.000.

Electronic Equipment Development Ltd.: *See*—
Johnson, Martin D., 4,438,670, Cl. 83-154.000.

Electronique Marcel Dassault: *See*—
Basset, Jean-Claude; and Belenfant, Guy, 4,439,670, Cl. 235-382.000.

Elektroschmelzwerk Kempten GmbH: *See*—
Wiebke, Gunther, deceased; Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

Eljo Products, Inc.: *See*—
Maggart, Michael J., 4,438,597, Cl. 49-501.000.

Elliott, William O.: *See*—
Baughman, Donald L.; and Elliott, William O., 4,438,854, Cl. 213-127.000.

Ellis, Earle R., to Monsanto Company. Spray-suppression device. 4,439,483, Cl. 428-287.000.

Elson, Thomas D.; and Millhone, Ralph S., to Chevron Research Company. Foam gravel packing. 4,438,815, Cl. 166-278.000.

Eltac Co. Ltd.: *See*—
Kato, Takashi, 4,438,713, Cl. 112-100.000.

Emhart Industries, Inc.: *See*—
Soloviff, Paul G.; and Lichtenfels, William C., 4,438,962, Cl. 292-144.000.

Emura, Akira: *See*—
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.

Endo, Shuzo: *See*—
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.

Energy Conversion Devices, Inc.: *See*—
Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., 4,438,723, Cl. 118-718.000.
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,438,724, Cl. 118-719.000.

Engel, Robert W. Three-dimensional picture with interchangeable scenes. 4,438,579, Cl. 40-160.000.

Engel, Thomas G.: *See*—
Noffke, Roy O.; and Engel, Thomas G., 4,438,673, Cl. 83-502.000.

Engel, Walter: *See*—
Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, 4,439,622, Cl. 564-406.000.

Engle, Charles J.; and Boitano, Robert A., to Gared Corporation. Shock-absorbing basketball goal unit. 4,438,923, Cl. 273-1.50R.

English, Gary F., to Foseco International Limited. Formers for lining metallurgical vessels. 4,438,906, Cl. 266-44.000.

Enomoto, Hiroshi: *See*—
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Enrenpreis, Seymour: *See*—
Ehrenpreis, Seymour; Comaty, Joseph E.; and Balagot, Reuben C., 4,439,452, Cl. 424-319.000.

Eppolito, Salvatore. Oxygen caddy. 4,438,764, Cl. 128-205.220.

Epsztein, Bernard, to Thomson-CSF. Extended interaction microwave oscillator including a sucession of vanes with orifices. 4,439,746, Cl. 331-82.000.

Erd, Ludwig: *See*—
Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, 4,439,700, Cl. 310-13.000.

Ernst Leitz Wetzlar GmbH: *See*—
Machmerth, Herbert, 4,439,011, Cl. 350-255.000.

ESAB North America, Inc.: *See*—
Singh, Gurvinder P.; and Jolly, William D., 4,439,249, Cl. 148-9.00R.

Esakov, Michael D.: *See*—
Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., 4,439,478, Cl. 428-137.000.

ESGE-Marby GmbH & Co., KG: *See*—
Niemann, Heinz, 4,439,009, Cl. 350-99.000.

Esposito, Christopher, to Four Seasons Solar Products Corporation. Greenhouse construction provided with special ridge for ventilation. 4,438,680, Cl. 98-43.00C.

Estel Hoogovens B.V.: *See*—
Beentjes, Nicolaas H., 4,438,653, Cl. 73-863.110.
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., 4,439,049, Cl. 374-124.000.

Estes, John H.: *See*—
Smolin, William; and Estes, John H., 4,439,535, Cl. 502-62.000.

Etablissement Dentaire Ivoclar: *See*—
Michl, Rudy; and Willi, Hanspeter, 4,439,380, Cl. 264-16.000.

Ethicon, Inc.: *See*—
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.

Ethyl Corporation: *See*—
Burton, Lester P. J.; and Shubkin, Ronald L., 4,439,374, Cl. 260-512.00R.
Zaweski, Edward F., 4,439,336, Cl. 252-32.70E.

Ethyl Products Company: *See*—
King, Roderick V., 4,439,082, Cl. 413-56.000.

Euteco Impianti S.p.A.: *See*—
Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., 4,439,570, Cl. 524-154.000.

Evans, Donald L., to Don Evans, Inc. Modular desk organizer and adapter therefor. 4,438,852, Cl. 211-11.000.

Evans, Francis J.: *See*—
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.

Evans, Samuel: *See*—
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, 4,439,615, Cl. 560-15.000.

Evans, William R., to AMP Incorporated. Pivoting electrical contact. 4,438,997, Cl. 339-97.00R.

Everett, Douglas H.; Bligh, Stephen G.; and Rojas, Fernando. Mesoporous carbons. 4,439,349, Cl. 502-180.000.

EVG Entwicklungs-und Verwertungs Gesellschaft m.b.H.: *See*—
Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, 4,439,658, Cl. 219-56.000.

Ex-Cell-O Corporation: *See*—
Kalokhe, Shivdas A., 4,439,074, Cl. 408-178.000.

Express Card & Label Co.: *See*—
George, John W.; and Rudolph, Eugene D., 4,438,696, Cl. 101-180.000.

Exxon Research and Engineering Co.: *See*—
Carter, James L.; and Barnett, Allan E., 4,439,544, Cl. 502-234.000.
DeYoung, Thomas W.; and Maltsev, Viacheslav B., 4,439,780, Cl. 346-140.00R.
Gudelis, David A.; and Reid, Lloyd E., 4,439,308, Cl. 208-33.000.
Hoffmann, James E., 4,439,288, Cl. 204-114.000.
Rhodes, Richard P., 4,439,305, Cl. 208-10.000.

Eyal, Aharon M.: *See*—
Baniel, Avraham M.; and Eyal, Aharon M., 4,439,408, Cl. 423-321.00S.

Faccone, Dominic M., to Midrex Corporation. Direct reduction of iron. 4,439,233, Cl. 75-35.000.

Fadda, Antonio L.: *See*—
Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., 4,439,570, Cl. 524-154.000.

Fajt, John, to Xenell Corporation. Electrical load imbalance detection and protection apparatus. 4,439,801, Cl. 361-55.000.

Falk, Robert A.: *See*—
Kleiner, Eduard K.; and Falk, Robert A., 4,439,329, Cl. 252-8.050.

Farrand Optical Co., Inc.: *See*—
LaRussa, Joseph A., 4,439,755, Cl. 340-980.000.

Farzullaev, Tofik S. O.: *See*—
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Feinberg, Irving: *See*—
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.

Ferag AG: *See*—
Honegger, Werner, 4,438,618, Cl. 53-430.000.

Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., to W. R. Grace & Co., Cryovac Division. Heat sealable, multi-ply polypropylene film. 4,439,478, Cl. 428-137.000.

Ferris, Donald L.; Olster, Elliot F.; and Marchitto, Michael J., to United Technologies Corporation. Rotor blade shaft integrity monitoring system. 4,439,106, Cl. 416-61.000.

Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. System for operating the drive of a vehicle. 4,438,664, Cl. 74-866.000.

Fiat Auto S.p.A.: *See*—
Bona, Eligio, 4,438,862, Cl. 220-86.0AT.

Fichtel & Sachs AG: *See*—
Bergles, Eduard, 4,439,171, Cl. 474-80.000.
Handke, Gunther; and Kopic, Johachim, 4,438,834, Cl. 188-322.160.

Fichtner, Karl-Heinz; Kramer, Willi; and Muskulus, Willi. Device for separating and taking off of sheets from a stack. 4,439,100, Cl. 414-115.000.

Fifer, James T. Clamped access floor panel assembly. 4,438,610, Cl. 52-263.000.

Filicicchia, Daniel J.: *See*—
O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., 4,438,884, Cl. 239-600.000.

Findeisen, Kurt: *See*—
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.

Finkel, Herbert. Apparatus for electronic word game. 4,438,932, Cl. 273-237.000.

Finsterbusch, Joachim: *See*—
Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, 4,438,547, Cl. 19-98.000.

Finsterwalder, Ulrich, to Dyckerhoff & Widmann Aktiengesellschaft. Container for transporting compressed gas, such as natural gas, and method of constructing the container. 4,438,719, Cl. 114-74.00A.

Firestone Tire & Rubber Company, The: *See*—
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.

Fischer, Klaus H.; and Kroschel, Heinz, to Dynamit Nobel Aktiengesellschaft. Cabling for secondary ammunition. 4,438,675, Cl. 89-1.811.

Fisher, Richard W.; and Cristell, Frank A., to Cristell, Frank A. Housing with frangible locking elements. 4,438,995, Cl. 339-39.000.

Fitterer, Horst; Koob, Hubert; and Nestler, Bert, to BASF Aktiengesellschaft. Tape cassette, especially a magnetic tape cassette. 4,438,892, Cl. 242-199.000.

Fitzky, Hans G.: *See*—
Klotz, Helmut; and Fitzky, Hans G., 4,439,292, Cl. 204-165.000.

Fitzky, Hans-Georg: *See*—
Ebneth, Harold; and Fitzky, Hans-Georg, 4,439,768, Cl. 343-18.00B.

Flanagan, Hugh L. Charge-retention storage battery. 4,439,501, Cl. 429-70.000.

Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., to Bell Telephone Laboratories, Incorporated. Terminal independent color memory for a digital image display system. 4,439,759, Cl. 340-703.000.

Fleming, James R., to Bell Telephone Laboratories, Incorporated. Method and apparatus for compiling three-dimensional digital image information. 4,439,760, Cl. 340-799.000.

Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., to Bell Telephone Laboratories, Incorporated. Terminal generation of dynamically redefinable character sets. 4,439,761, Cl. 340-735.000.

Flessluittechniek B. V. Handelend Onder De Naam Calumatic: *See*—
Damen, Franciscus A., 4,438,840, Cl. 198-398.000.

Flint, Bruce K., to Acton Research Corporation. Method of making laser fusion debris shield. 4,439,259, Cl. 156-245.000.

Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., to American Cyanamid Company. Novel hydroxy substituted prostanoic acids, esters, congeners, intermediates and process. 4,439,365, Cl. 260-395.000.

FMC Corporation: *See*—
Manganaro, James L., 4,439,411, Cl. 423-560.000.
Williams, Michael R.; and Tucker, Albert R., 4,438,957, Cl. 285-223.000.

Fokos, Peter. Replaceable lagging for drum-type pulleys. 4,439,173, Cl. 474-191.000.

Foley, Kevin M.: *See*—
Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., 4,439,211, Cl. 55-1.000.

Follet, Michel: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.

Ford, James A.; and Haarer, Steven R., to Cooper Industries, Inc. Master carrier for a traverse rod. 4,438,798, Cl. 160-126.000.

Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, to Olin Corporation."Composite fiber reinforced plastic frame. 4,439,298, Cl. 204-258.000.

Ford Motor Company: *See*—
Bewers, Ronald, 4,438,826, Cl. 180-89.140.
Eichenberger, Peter; and Lodge, John H., 4,438,663, Cl. 74-760.000.
Watanabe, Shunso F., 4,438,745, Cl. 123-339.000.

Forgione, Peter S.: *See*—
Singh, Balwant; Chiang, Laurence W.; and Forgione, Peter S., 4,439,616, Cl. 560-25.000.

Forlani, Riccardo, to Ing. C. Olivetti & C., S.p.A. Development unit for electrophotocopiers. 4,438,722, Cl. 118-657.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,439,228, Cl. 71-95.000.

Fory, Werner; Martin, Henry; and Pissiotas, Georg, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,439,230, Cl. 71-96.000.

Foseco International Limited: *See*—
English, Gary F., 4,438,906, Cl. 266-44.000.

Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., to Majik-Ironers, Inc. Ironing apparatus support. 4,438,577, Cl. 38-107.000.

Foster, Thomas E.: *See*—
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 4,438,577, Cl. 38-107.000.

Foster Wheeler Energy Corporation: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,439,406, Cl. 423-244.000.

Foster, Wilbur A.: *See*—
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 4,438,577, Cl. 38-107.000.

Foulletier, Louis, to PCUK Produits Chimiques Ugine Kuhlmann. Catalyst of chromium oxide microspheres and process for its preparation. 4,439,534, Cl. 502-8.000.

Four Seasons Solar Products Corporation: *See*—
Esposito, Christopher, 4,438,680, Cl. 98-43.00C.

Fox, Donald L. Bag handle. 4,438,967, Cl. 294-164.000.

Fox, Jeffrey R., to GTE Laboratories Incorporated. Comparator circuit. 4,439,694, Cl. 307-362.000.

Fracaro, Eugene E. Multi-stage hot water heating apparatus. 4,438,728, Cl. 122-14.000.

Framatome: *See*—
Gillot, Georges, 4,438,912, Cl. 269-55.000.

Frame, Wayne W., to Ball Corporation. Video imaging apparatus having a pliant clock. 4,439,788, Cl. 358-213.000.

Frank, Joseph C.: *See*—
Carroll, Glenn G.; and Frank, Joseph C., 4,438,960, Cl. 285-367.000.

Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., to American Cyanamid Company. Stable emulsion copolymers of acrylamide and ammonium acrylate for use in enhanced oil recovery. 4,439,332, Cl. 252-8.55D.

Frankle, Helmut: *See*—
Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, 4,439,684, Cl. 250-396.00R.

Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e. V.: *See*—
Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, 4,439,622, Cl. 564-406.000.

Freeman, Barrie A., to Ciba-Geigy AG. Drum-containing apparatus for ready processing and handling of photographic material. 4,439,033, Cl. 354-316.000.

Frehner, Herbert, to Satronic AG. Nozzle, particularly for burners. 4,438,882, Cl. 239-462.000.

Fresse S.A.: *See*—
Besse, Maurice; and Grisoni, Jacques, 4,439,122, Cl. 425-4.00R.

Frey, Bill; Haynie, Mark; and Psaras, John, to C. M. Kemp Manufacturing Co., The. Nitrogen generation system. 4,439,213, Cl. 55-31.000.

Frezza, William A.: *See*—
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,759, Cl. 340-703.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,761, Cl. 340-735.000.

Frias, Robert, to Ingram Corporation. Pipe feeding system. 4,439,091, Cl. 414-745.000.

Friedrich, Peter. Door latch mechanism with generally linearly movable operating member. 4,438,963, Cl. 292-168.000.

Friesen, W. Otto; and Block, Gene D., to University of Virginia Alumni Patents Foundation. Passive contactless monitor for detecting cessation of cardiopulmonary. 4,438,771, Cl. 128-671.000.

Fritsch, William E. Wheelchair carrier. 4,438,875, Cl. 224-42.03R.

Fritz, Otmar, to Siemens Aktiengesellschaft. Film carrier for an electrical conductive pattern. 4,438,847, Cl. 206-330.000.

Frohn, Walter. Machine for producing blown hollow synthetic resin workpieces. 4,439,127, Cl. 425-155.000.

Fuchizawa, Tetsuro: *See*—
Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, 4,439,496, Cl. 428-513.000.

Fuji Machine Mfg. Co. Ltd.: *See*—
Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, 4,438,559, Cl. 29-740.000.

Fuji Photo Film Co., Ltd.: *See*—
Kato, Hisatoyo; and Ishida, Masamitsu, 4,439,866, Cl. 378-19.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,795, Cl. 360-131.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,439,796, Cl. 360-131.000.
Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, 4,439,682, Cl. 250-327.200.
Nater, Charles, 4,439,793, Cl. 360-121.000.
Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, 4,439,519, Cl. 430-405.000.
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.
Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, 4,439,496, Cl. 428-513.000.
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, 4,439,486, Cl. 428-332.000.

Fujii, Etsuo: *See*—
Sato, Makoto; and Fujii, Etsuo, 4,438,629, Cl. 60-579.000.

Fujii, Kunihisa; Tomono, Noboru; and Shikano, Yukio, to Takamisawa Electric Co., Ltd. Armature holding structure and hinge wire spring used therein. 4,439,750, Cl. 335-274.000.

Fujii, Masahiko: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.

Fujimura, Akira: *See*—
Gotoh, Osamu; and Fujimura, Akira, 4,438,627, Cl. 60-278.000.

Fujioka, Futoshi: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.

Fujisawa, Kyuichi, to Alps Electric Co., Ltd. Pen type printing apparatus. 4,439,778, Cl. 346-136.000.

Fujita, Shinsaku: *See*—
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.

Fujita, Shozo: *See*—
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.

Fujitsu Fanuc Limited: *See*—
Kohzai, Yoshinori; and Oyama, Shigeaki, 4,439,703, Cl. 310-186.000.

Fujitsu Limited: *See*—
Itoh, Hideo; and Yamauchi, Takahiko, 4,439,841, Cl. 365-51.000.

Fujiwara, Hideo: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Fujiwara, Ryoji: *See*—
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.

Fujiyama, Masaaki: *See*—
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, 4,439,486, Cl. 428-332.000.

Fukami, Akira: *See*—
Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, 4,438,543, Cl. 15-250.420.

Fukuda, Kyohei: *See*—
Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, 4,439,710, Cl. 313-414.000.

Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, to UBE Industries; and Toyota Jidosha Kabushiki Kaisha. Propylene polymer composition. 4,439,573, Cl. 524-451.000.

Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, to Air Products and Chemicals, Inc.; and Daido Oxygen Company Ltd. Apparatus for the production of blow molded articles accompanied with the recovery of a blowing gas. 4,439,126, Cl. 425-135.000.

Fukuta, Toshiaki: *See*—
Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.

Furukawa, Hajime; and Ohta, Yoshitsugu, to Pioneer Electronic Corporation. Power cutting device for terminal units of CATV system. 4,439,784, Cl. 358-86.000.

Furusho, Takao: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.

Futatsuishi, Shunichi: *See*—
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.

G. D. Searle & Co.: *See*—
Tsau, Josef H.; and Young, James G., 4,439,460, Cl. 426-548.000.

GA Technologies Inc.: *See*—
Porter, John T., II, 4,439,404, Cl. 423-3.000.

Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., to I M L Corporation. Methods of preparing polyimides and artifacts composed thereof. 4,439,381, Cl. 264-26.000.

Gagnon, Pierre; and Laforest, Pierre. Obstacle detector for a descending or ascending load. 4,438,903, Cl. 254-269.000.

Gaikowski, Michael D.: *See*—
Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., 4,439,076, Cl. 410-153.000.

Galow, Manfred, to Bergwerksverband GmbH; and Didier Engineering GmbH. Filling arrangement for coke oven chambers. 4,439,276, Cl. 202-239.000.

Galtz, Rudiger; and Reinhardt, Rudolf, to Webasto-Werk W. Baier GmbH & Co. Combustion air fan. 4,439,095, Cl. 415-52.000.

Gamble, Robert L.: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,439,406, Cl. 423-244.000.

Gamzo, Israel. Mechanical bouncing, rolling and skating apparatus. 4,438,919, Cl. 272-1.00B.

Ganci, James B., to Du Pont de Nemours, E. I., and Company. Aqueous milling of quinacridone pigment. 4,439,240, Cl. 106-288.00Q.

Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., to Smith Kline & French Laboratories Ltd. Isoureas and isothioureas. 4,439,435, Cl. 424-251.000.

Gared Corporation: *See*—
Engle, Charles J.; and Boitano, Robert A., 4,438,923, Cl. 273-1.50R.

Garito, Anthony F., to University Patents, Inc. Photoresistive compositions. 4,439,514, Cl. 430-272.000.

Garner, Claude R.; and Neilson, William J., to Smith International, Inc. Seal for rotary cone rock bit. 4,438,934, Cl. 277-92.000.

Garner, Lloyd L., to Globe Oil Tools, Inc. Rotary bit bearing system. 4,439,050, Cl. 384-100.000.

Garrett Corporation, The: *See*—
Edmonds, David H., 4,439,104, Cl. 415-161.000.

Gattuso, David A.: *See*—
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,438,724, Cl. 118-719.000.

Gauss, Robert C.: *See*—
Hinshaw, Waldo S.; and Gauss, Robert C., 4,439,733, Cl. 324-322.000.

Gdulewicz-Gruszecka, Maria: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, to Ing. Rudolf Hell GmbH. Arrangement for the point- and line-wise recording of image information. 4,439,022, Cl. 350-572.000.

Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., to Westinghouse Electric Corp. Prestressed dome closure flange. 4,438,866, Cl. 220-319.000.

Geiler, Volkmar: *See*—
Mennemann, Karl; and Geiler, Volkmar, 4,439,531, Cl. 501-75.000.

Geissmann, Robert. Kinetic fireplace and spit rooster. 4,438,684, Cl. 99-341.000.

Gelbein, Abraham P.: *See*—
Greene, Marvin I.; and Gelbein, Abraham P., 4,439,309, Cl. 208-51.000.

Gendler, Paul L.; and Twieg, Robert J., to International Business Machines Corporation. Phenothiazine leucodyes for electrochromic recording. 4,439,280, Cl. 204-2.000.

General Dental, Inc.: *See*—
Houseman, Kenneth R., 4,439,299, Cl. 204-271.000.
Houseman, Kenneth R., 4,439,300, Cl. 204-272.000.

General Electric Company: *See*—
Berestecki, Stephen B., 4,438,626, Cl. 60-39.320.
Chapman, Thomas G., 4,439,812, Cl. 361-314.000.
Olson, Daniel R., 4,439,494, Cl. 428-412.000.
Reitz, Roderick, 4,439,807, Cl. 361-127.000.
Rhodes, Junior L., 4,439,814, Cl. 361-321.000.
Spencer, William R., 4,438,778, Cl. 137-112.000.
Tomson, James M., 4,438,839, Cl. 198-345.000.
Ulug, Mehmet E., 4,439,856, Cl. 370-85.000.

General Mills, Inc.: *See*—
Merle, Rene; Uecker, Myron; and Kozlik, Robert, 4,438,634, Cl. 62-123.000.

General Motors Corporation: *See*—
Rees, Richard W. A., 4,438,895, Cl. 248-396.000.
Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., 4,438,971, Cl. 296-191.000.

General Signal Corporation: *See*—
Dobrzanski, John J., 4,439,683, Cl. 250-381.000.

Gentex Corporation: *See*—
Scalzo, John P., 4,439,645, Cl. 179-156.00R.

Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., to Hughes Aircraft Company. Vapor transport process for growing selected compound semiconductors of high purity. 4,439,266, Cl. 156-614.000.

Geohegan, Kenneth P., Jr.; and Gruen, Henry M., to Westinghouse Electric Corp. Sonar system. 4,439,845, Cl. 367-87.000.

George, John W.; and Rudolph, Eugene D., to Express Card & Label Co. Multi-purpose flexographic press module. 4,438,696, Cl. 101-180.000.

Georges, Jean-Claude, to Societe Aman. Units for generating constant-frequency alternating electric energy with substitute driving means. 4,439,720, Cl. 322-4.000.

Gerasimov, Vasily I.: *See*—
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.

Gerhart, Fritz: *See*—
Bey, Philippe; Gerhart, Fritz; and Jung, Michel, 4,439,619, Cl. 560-169.000.

Gertsch, Ulrich, to TMC Corporation. Sole-support plate. 4,438,948, Cl. 280-618.000.

Getty Synthetic Fuels, Inc.: *See*—
Zison, Stanley W.; and Turer, Robert N., 4,438,883, Cl. 239-553.300.

Gewerkschaft Eisenhutte Westfalia: *See*—
Heitkamp, Herbert, 4,439,063, Cl. 405-145.000.

Ghandehari, Mohammad H., to Union Oil Company of California. Samarium metal production. 4,439,232, Cl. 75-10.00R.

Gibas, Christoph, to bso Steuerungstechnik GmbH. Direct current electromagnet. 4,439,751, Cl. 335-278.000.

Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., to Gould Inc. Gas switch. 4,439,500, Cl. 429-27.000.

Gibson, Paul N. Grade monitoring and steering apparatus. 4,438,820, Cl. 175-45.000.

Gildemeister AG: *See*—
Schaefer, Wolfgang, 4,439,090, Cl. 414-736.000.

Gilg, Bernard: *See*—
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, 4,439,615, Cl. 560-15.000.

Gillespie, Robert J.: *See*—
Weglin, Walter, 4,438,569, Cl. 33-438.000.

Gillham, Peter J., to BSG (Security) Limited. Electromagnetic lock. 4,439,808, Cl. 361-144.000.

Gillone, Walter: *See*—
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.

Gillot, Georges, to Framatome. Swivelling device for supporting a large-size part in the form of a spherical dome. 4,438,912, Cl. 269-55.000.

Gilman, Harris H., to Electric Power Research Institute, Inc. Apparatus for remotely positioning sensing devices in a reactor during operation thereof. 4,438,649, Cl. 73-432.00R.

Gilmore, Peter B.: *See*—
Bresin, Mark S.; and Gilmore, Peter B., 4,439,654, Cl. 200-302.100.

Girgis, Mikhail M., to PPG Industries, Inc. Aqueous, adhesive coating composition with a non-selfcrosslinkable elastomer for use with filamentary materials. 4,439,556, Cl. 523-206.000.

Giroux, Eugene L., to Richardson-Merrell Inc. Snake bite therapy. 4,439,443, Cl. 424-285.000.

Gislaved Aktiebolag: *See*—
Pettersson, Helge, 4,438,982, Cl. 305-35.0EB.

Givaudan Corporation: *See*—
Schenk, Hanspeter, 4,439,353, Cl. 252-522.00R.

Globe Linings, Inc.: *See*—
Wilson, John V.; and Kays, William B., 4,438,863, Cl. 220-227.000.

Globe Oil Tools, Inc.: *See*—
Garner, Lloyd L., 4,439,050, Cl. 384-100.000.

GNB Batteries Inc.: *See*—
Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., 4,439,719, Cl. 320-31.000.

Godsted, Kent B. Concrete screw anchor. 4,439,077, Cl. 411-411.000.

Goedert, Ferdinand: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Goedken, James H., to Hoover Universal, Inc. Fluidized bed discharge bin with aerating blower. 4,439,072, Cl. 406-91.000.

Goetz, Charles T.: *See*—
Hussels, Bernard H.; and Goetz, Charles T., 4,438,823, Cl. 177-210.0EM.

Golton, Howard J.: *See*—
Pask, George; and Golton, Howard J., 4,438,939, Cl. 277-236.000.

Gontowski, Walter S., Jr., to Sprague Electric Company. Two terminal integrated circuit light-sensor. 4,439,673, Cl. 250-214.00A.

Goossens, Walter; and Schrank, Wolfgang, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Method and chimney for reducing the emission of solid particles. 4,439,274, Cl. 201-41.000.

Gordon, Allin K.: *See*—
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.

Goto, Tomomichi: *See*—
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.

Gotoh, Osamu; and Fujimura, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas purification apparatus in internal combustion engine. 4,438,627, Cl. 60-278.000.

Gotou, Takaharu: *See*—
Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, 4,438,736, Cl. 123-90.160.

Gott, Hans: *See*—
Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, 4,439,658, Cl. 219-56.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane diacrylate compositions useful in forming canulae. 4,439,583, Cl. 525-127.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Gas and ion permeable membranes formed of polyurethane diacrylate compositions. 4,439,584, Cl. 525-127.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane diacrylate compositions as carrier for pharmacological agents. 4,439,585, Cl. 525-127.000.

Gould Inc.: *See*—
Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., 4,439,500, Cl. 429-27.000.

Gove, Don: *See*—
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

Graffenberger, Wilhelm: *See*—
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.

Graham, Charles H., to Intermountain Thermafloor. Electrical heating system. 4,439,666, Cl. 219-213.000.

Graser, Earl J., to Manville Service Corp. Wrap-around style beverage bottle carrier with fully integrated product separation means. 4,438,843, Cl. 206-148.000.

Gravi-Mechanics Co.: *See*—
Dedolph, Richard R., 4,439,552, Cl. 521-159.000.

Gray, Joseph E., to Norwich Eaton Pharmaceuticals, Inc. Method of alleviating systemic mycotic infections. 4,439,429, Cl. 424-285.000.

Great Lakes Carbon Corporation: *See*—
Joo' , Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., 4,439,382, Cl. 264-29.500.
Wilson, William F., 4,439,491, Cl. 428-408.000.

Green, George E.: *See*—
Irving, Edward; and Green, George E., 4,439,291, Cl. 204-159.230.

Green, Laddie L., to Stauffer Chemical Company. Diallyl dichloroacetmide herbicide antidote. 4,439,227, Cl. 71-95.000.

Greene, Marvin I.; and Gelbein, Abraham P., to Chem Systems Inc. Two-stage hydrogen donor solvent cracking process. 4,439,309, Cl. 208-51.000.

Greenwell, Bartley A.: *See*—
Czyzewski, Ted S.; and Greenwell, Bartley A., 4,439,461, Cl. 426-601.000.

Greff, Richard J.: *See*—
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,439,188, Cl. 604-283.000.

Greigger, Paul P.; Boberski, William G.; and Seiner, Jerome A., to PPG Industries, Inc. Pigmented coating composition containing a mixture of alkoxysilanes. 4,439,239, Cl. 106-287.160.

Greiner, Max, to Robert Bosch GmbH. Rpm governor for a fuel injection pump. 4,438,746, Cl. 123-373.000.

Grippe, James M., to Varo, Inc. DC to DC switching regulator with temperature compensated isolated feedback circuitry. 4,439,821, Cl. 363-26.000.

Gripper, Inc.: *See*—
Reneau, Bobby J.; and Morris, Bruce E., 4,438,901, Cl. 254-29.00A.

Grisham, C. Lynwood; and Grisham, Freddie A., to Grisham Corporation. Door latch means. 4,438,961, Cl. 292-67.000.

Grisham Corporation: *See*—
Grisham, C. Lynwood; and Grisham, Freddie A., 4,438,961, Cl. 292-67.000.

Grisham, Freddie A.: *See*—
Grisham, C. Lynwood; and Grisham, Freddie A., 4,438,961, Cl. 292-67.000.

Grisoni, Jacques: *See*—
Besse, Maurice; and Grisoni, Jacques, 4,439,122, Cl. 425-4.00R.

Groen Division - Dover Corporation: *See*—
Czyzewski, Ted S.; and Greenwell, Bartley A., 4,439,461, Cl. 426-601.000.

Groenhof, Eugene D., to Dow Corning Corporation. Silicone compositions for buried electrical splice closures. 4,439,630, Cl. 174-21.00R.

Groepper, Jurgen, to Pennwalt Corporation. Process for crosslinking of polymers and copolymers using free radical forming agents. 4,439,388, Cl. 264-130.000.

Grohe, Klaus: *See*—
Klauke, Erich; and Grohe, Klaus, 4,439,620, Cl. 562-493.000.

Grooten, Albertus T. M., to N.K.F. Groep B.V. Corrosion resistant armored cable and method of manufacturing said cable. 4,439,633, Cl. 174-106.00R.

Gross, Jerome A.: *See*—
Hohenemser, Kurt H., 4,439,105, Cl. 416-13.000.

Gross, Leo. Motor vehicle rear viewing system. 4,439,021, Cl. 350-452.000.

Gross, Raymond J.; and Hogg, Fredrick W., to Mattel, Inc. Interchangeable keyboard defining means. 4,439,757, Cl. 340-365.0VL.

Grosscurt, Arnoldus C.: *See*—
van Hes, Roelof; and Grosscurt, Arnoldus C., 4,439,440, Cl. 424-273.00P.

Grover, Richard L., to Brunswick Corporation. Filament wound vessel with improved polar fitting. 4,438,858, Cl. 220-3.000.

Growers Vacuum Cool Company: *See*—
Victorino, Robert W., 4,439,093, Cl. 414-786.000.

Gruen, Henry M.: *See*—
Geohegan, Kenneth P., Jr.; and Gruen, Henry M., 4,439,845, Cl. 367-87.000.

Grund, Miroslaw: *See*—
Rees, Herbert; Brown, Paul; and Grund, Miroslaw, 4,439,133, Cl. 425-556.000.

Grunder, Werner, to Zellweger Uster Ltd. Method and apparatus for controlling fluctuations in sliver weight on cards, carding machines and the like. 4,438,548, Cl. 19-105.000.

Grupp, Rolf: *See*—
Stengle, Rolf; and Grupp, Rolf, 4,438,914, Cl. 270-31.000.

Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, to Politechnika Gdanska; and Instytut Przemyslu Farmaceutyoznego Majakowskiego. Acetylmethyl ester of hetacyllin and/or salts of this ester. 4,439,363, Cl. 260-239.100.

GTE Automatic Electric Incorporated: *See*—
Blackburn, Tom L., 4,439,634, Cl. 179-2.510.

GTE Automatic Electric Labs Inc.: *See*—
Tarleton, George K., 4,439,805, Cl. 361-92.000.

GTE Laboratories Incorporated: *See*—
Fox, Jeffrey R., 4,439,694, Cl. 307-362.000.

GTE Products Corporation: *See*—
Liang, Anthony; and Cheng, Hsiao L., 4,439,468, Cl. 427-216.000.

Gudelis, David A.; and Reid, Lloyd E., to Exxon Research and Engineering Co. Solvent dewaxing waxy bright stock using a combination polydialkylfumarate-vinyl acetate copolymer and wax-naphthalene condensate dewaxing aid. 4,439,308, Cl. 208-33.000.

Gugel, Georg, to Kraftwerk Union Aktiengesellschaft. Manipulator for remote-controlled inspection and, if necessary or desirable, repair of heat exchanger tubes. 4,438,805, Cl. 165-76.000.

Guibert, Philippe: *See*—
Chardon, Andre-Marie; and Guibert, Philippe, 4,438,606, Cl. 52-79.100.

Guild, George A., to Don Brothers, Buist P.L.C. Tufted fabrics and method of making. 4,439,476, Cl. 428-96.000.

Guillaume, Raymond, to Baby Relax. Support for child. 4,438,941, Cl. 280-47.400.

Gumiezna, Teresa: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Gusein-Zade, Sekher G. K.: *See*—
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Guthrie, James L.; and Kehr, Clifton L., to W. R. Grace & Co. High molecular weight aromatic amine scavengers and method of use. 4,439,553, Cl. 521-159.000.

Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., to Westinghouse Electric Corp. Converting multiphase power from one frequency to another using current waveforms. 4,439,823, Cl. 363-161.000.

Haarer, Steven R.: *See*—
Ford, James A.; and Haarer, Steven R., 4,438,798, Cl. 160-126.000.

Haas, Andrew J. Orthodontic appliances and method of treatment. 4,439,148, Cl. 433-5.000.

Haas, Franz, Jr.: *See*—
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,438,685, Cl. 99-342.000.

Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann. Wafer baking oven. 4,438,685, Cl. 99-342.000.

Haas, Johann: *See*—
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,438,685, Cl. 99-342.000.

Hadden, James P., to Hobart Corporation. Low hot water volume warewasher. 4,439,242, Cl. 134-25.200.

Hadley, John S.: *See*—
Verberne, Wim J. C.; and Hadley, John S., 4,439,283, Cl. 204-38.00R.

Haefner, John A.: *See*—
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.

Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, to Bayerische Motoren Werke Aktiengesellschaft. Motor vehicle provided with an additional mirror embracing the dead angle. 4,439,013, Cl. 350-307.000.

Haisma, Jan: *See*—
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,439,529, Cl. 501-45.000.

Haley, Neil F.: *See*—
Perlstein, Jerome H.; and Haley, Neil F., 4,439,505, Cl. 430-58.000.

Hall, George W. Segmented collar tripod for holding surveyor's stake. 4,438,896, Cl. 248-523.000.

Hall, Glenn E.: *See*—
Anderson, Donald E.; Hall, Glenn E.; and Foley, Kevin M., 4,439,211, Cl. 55-1.000.

Hall, Henry K., Jr.; and Padias, Anne B., to Celanese Corporation. Process for the preparation of polybutylene terephthalate. 4,439,597, Cl. 528-272.000.

Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., to SYNTEX (U.S.A.) Inc. Contraceptive compositions and methods employing 1-substituted imidazole derivatives. 4,439,441, Cl. 424-273.00R.

Halliburton Company: *See*—
Borchardt, John K., 4,439,334, Cl. 252-8.55D.
Loesch, Stanley B.; St. John, James C.; and Mints, Danny K., 4,438,729, Cl. 122-26.000.
Zimmerman, John C., 4,438,933, Cl. 277-9.500.

Hamada, Shoichi, to Todo Seisakusho Ltd. Full automatic leasing machine for a warp beam containing warps of different colors. 4,438,553, Cl. 28-184.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Composite label web, price tag and re-price label combination, and method of price and re-price marking. 4,438,950, Cl. 283-70.000.

Hamm, Wilfried. Stairtread for spiral staircase. 4,438,608, Cl. 52-187.000.

Hammon, Donald P. Brush tool for wells. 4,438,812, Cl. 166-173.000.

Hammyo, Masayuki: *See*—
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Hanamoto, Hiroyuki; and Horie, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Heat roller fixing device. 4,439,143, Cl. 432-36.000.

Handa, Tadahiko: *See*—
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.

Handke, Gunther; and Kopic, Johachim, to Fichtel & Sachs AG. Hydro-pneumatic damping unit. 4,438,834, Cl. 188-322.160.

Hannah, Voris E. Sharpening device for a chain saw. 4,438,667, Cl. 76-36.000.

Hansch, Ferdinand: *See*—
Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.

Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e. V. Process of forming large crystalled 1,3,5-triaminotrinitrobenzene. 4,439,622, Cl. 564-406.000.

Hanson, Harry T., to Celanese Corporation. Acetylene-terminated aromatic enyne resins and method of production thereof. 4,439,590, Cl. 526-285.000.

Hanyu, Susumu, to Janome Sewing Machine Industry Co., Ltd. Phase indication device of sewing machine. 4,438,718, Cl. 112-274.000.

Hara, Hiroshi: *See*—
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.

Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, to Nissan Motor Co., Ltd. Variable valve timing arrangement with automatic valve clearance adjustment. 4,438,736, Cl. 123-90.160.

Harada, Naoki; and Abeta, Sadaharu, to Sumitomo Chemical Company, Limited. Aqueous liquid dye composition: storage stable reactive dye with reduction inhibitor. 4,439,205, Cl. 8-527.000.

Hardigg Industries, Inc.: *See*—
Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., 4,439,263, Cl. 156-497.000.

Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., to Hardigg Industries, Inc. Method and apparatus for bonding plastic materials. 4,439,263, Cl. 156-497.000.

Harms, Hans-Wilhelm, to Intertractor Viehmann GmbH & Co. Hinge joint for a track chain. 4,438,981, Cl. 305-14.000.

Harrington, Timothy A., to Rockwell International Corporation. Corporate amplifier apparatus with improved degradation. 4,439,740, Cl. 330-124.00R.

Harris, Alva F.: *See*—
Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., 4,439,571, Cl. 524-183.000.

Harris, Gary W.: *See*—
Walton, Eric K.; and Harris, Gary W., 4,438,662, Cl. 74-625.000.

Harris Graphics Corporation: *See*—
Mebus, Henry R., 4,439,097, Cl. 414-42.000.
Werkheiser, James S., 4,439,084, Cl. 414-62.000.

Harrison, Alexander, to Commonwealth Scientific and Industrial Research Organization. Monitoring of elongate magnetically permeable members. 4,439,731, Cl. 324-239.000.

Harrison, Charles H.: *See*—
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.

Hart, Robert J. Method for the continuous manufacture of finely divided metals, particularly magnesium. 4,439,379, Cl. 264-12.000.

Hartel, Gunter; and Schurfeld, Armin, to Bosch & Pierburg System oHG. Flow proportioning device. 4,439,376, Cl. 261-50.00A.

Hartmann, Albert: *See*—
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See*—
Goossens, Walter; and Schrank, Wolfgang, 4,439,274, Cl. 201-41.000.

Harvey, Rex: *See*—
Dyett, Derek H.; and Harvey, Rex, 4,438,774, Cl. 131-282.000.

Harwood, Richard J.; and Bondi, Joseph V., to Merck & Co., Inc. Water and drug delivery system for suppository use. 4,439,194, Cl. 604-890.000.

Harwood, William J., to Scapa Inc. Papermakers belt formed from warp yarns of non-circular cross section. 4,438,788, Cl. 139-383.00A.

Hasegawa, Shumpei, to Honda Motor Co., Ltd. Idling rpm feedback control method for internal combustion engines. 4,438,744, Cl. 123-327.000.

Hasegawa, Teruyuki: *See*—
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Hasenauer, Randal J., to Mobil Oil Corporation. Method for shape-forming acrylonitrile polymer aquagel film. 4,439,389, Cl. 264-216.000.

Hastings, Charles E.; and Hastings, June, heir. Adjustable ratchet pliers. 4,438,669, Cl. 81-410.00R.

Hastings, June, heir: *See*—
Hastings, Charles E.; and Hastings, June, heir, 4,438,669, Cl. 81-410.00R.

Hattori, Tadashi, to Isuzu Kogyo Kabushiki Kaisha. Pipe coupling. 4,438,954, Cl. 285-104.000.

Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, to Nippon Soken, Inc. Spark plug with a wide discharge gap. 4,439,707, Cl. 313-130.000.

Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, to Nippon Soken, Inc. Spark plug having dual gaps. 4,439,708, Cl. 313-140.000.

Hattori, Tadashi: *See*—
Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,438,647, Cl. 73-117.300.

Haubrich, Peter; Hoogendoorn, Abraham; and Jahnke, Uwe, to U.S. Philips Corporation. Apparatus for reproducing information recorded in a plurality of adjacent tracks. 4,439,799, Cl. 360-77.000.

Hauser, Daniel: *See*—
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.

Hauserman, Inc.: *See*—
Raith, Richard L.; and Davenport, Joseph A., 4,438,614, Cl. 52-580.000.

Hawley, Ronald C., to Polymer Composites, Inc. Method of manufacturing a composite reinforcing structure. 4,439,387, Cl. 264-108.000.

Hawrylo, Frank Z., to United States of America, Air Force. Quaternary alloy. 4,439,399, Cl. 420-580.000.

Hayakawa, Izumi: *See*—
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.

Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, to Kobe Steel, Ltd. System for treating radioactive waste. 4,439,318, Cl. 210-208.000.

Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, to Nihon Medi-Physics Company, Ltd. Radioactive diagnostic agent for bone scanning and non-radioactive carrier therefor. 4,439,413, Cl. 424-1.100.

Hayashi, Yoshihiro: *See*—
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.

Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Overhead camshaft engine. 4,438,734, Cl. 123-90.270.

Hayer, David R. Power transfer device. 4,438,656, Cl. 74-63.000.

Hayes, Michael D.: *See*—
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.

Haynie, Mark: *See*—
Frey, Bill; Haynie, Mark; and Psaras, John, 4,439,213, Cl. 55-31.000.

Hays, Lance G.; Studhalter, Walter R.; and Ritzi, Emil W., to Biphase Energy Systems. Refrigeration process using two-phase turbine. 4,438,638, Cl. 62-500.000.

Hazue, Masaaki: *See*—
Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, 4,439,413, Cl. 424-1.100.

Hebert, Alfred M. Fifth wheel safety device for tractor trailers. 4,438,943, Cl. 280-432.000.

Hedlund Manufacturing Co., Inc.: *See*—
Martin, Mervin G., 4,438,885, Cl. 241-101.00B.

Hefele, Josef, to Kufner Textilwerke KG. Interlining for garments and method for the manufacture thereof. 4,438,533, Cl. 2-97.000.

Heffelmire, Brad A.: *See*—
Cimochowski, Anthony E.; and Heffelmire, Brad A., 4,439,175, Cl. 493-413.000.

Hefler, Rudolph R. Baseball game. 4,438,927, Cl. 273-90.000.

Hefley, Richard M.; Tomren, Douglas R.; and Jacoby, Jerold L., to United States of America, Air Force. Lightweight optical jammer system. 4,439,767, Cl. 343-18.00E.

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Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., to Mobil Oil Corporation. Multilayer heat sealable oriented packaging film and method of forming same. 4,439,493, Cl. 428-414.000.

Heinze, Siegfried: *See*—
Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, 4,439,726, Cl. 324-156.000.

Heitkamp, Herbert, to Gewerkschaft Eisenhutte Westfalia. Hydraulic control means. 4,439,063, Cl. 405-145.000.

Helix Technology Corporation: *See*—
Lessard, Philip A.; and Bartlett, Allen J., 4,438,632, Cl. 62-55.500.

Helms, Charles R., to Container Corporation of America. Tamperproof closure. 4,438,864, Cl. 220-265.000.

Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung; and Messerschmitt Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Accelerating grid. 4,439,684, Cl. 250-396.00R.

Hemmerle, Clayton J.; and Basinger, Richard A. Surface defining slats and articles utilizing same. 4,438,800, Cl. 160-371.000.

Hemphill, Dean P.: *See*—
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., 4,438,754, Cl. 125-14.000.

Henderson, David: *See*—
Ballany, John M.; and Henderson, David, 4,439,439, Cl. 424-270.000.

Henderson, James W.: *See*—
Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., 4,439,840, Cl. 364-900.000.

Hendricks, Udo W.: *See*—
Hildebrand, Dietrich; and Hendricks, Udo W., 4,439,206, Cl. 8-543.000.

Henkel KGaA: *See*—
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, 4,439,418, Cl. 424-70.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Vierkotter, Peter; and Weltgen, Paul-Otto, 4,438,869, Cl. 222-1.000.

Hennart, Claude; and Courdent, Jacques, to Airwick Industries, Inc. Device intended for dispensing insecticide vapors. 4,439,415, Cl. 424-16.000.

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Henrion, Romain: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Henss, Wilhelm: *See*—
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Henton, David E., to Dow Chemical Company, The. Blends of aromatic polycarbonate with random copolymers of a monovinylidene aromatic and an unsaturated carboxylic acid. 4,439,582, Cl. 525-67.000.

Herchenroeder, Robert B.; and Lai, George Y., to Cabot Corporation. Method of heat treating NICRALY alloys for use as ceramic kiln and furnace hardware. 4,439,248, Cl. 148-6.200

Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, to U.S. Philips Corporation. X-Ray generator for an X-ray tube comprising a grounded grid. 4,439,869, Cl. 378-113.000.

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Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Herrmann, Fritz; and Ost, Christian, to Alkem GmbH. Method for electrochemical oxidizing to the Pu (VI). 4,439,279, Cl. 204-1.500.

Heslop, Terence M. Ski rack and carrier. 4,438,878, Cl. 224-319.000.

Hesterman, Victor W.; and Drummond, William E., to Unied Scientific Corporation. Electrically balanced fluxgate gradiometers. 4,439,732, Cl. 324-247.000.

Heymes, Alain: *See*—
Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, 4,439,442, Cl. 424-285.000.

Heymes, Rene; and Vignau, Michel, to Roussel Uclaf. Oximes. 4,439,433, Cl. 424-246.000.

Hibi, Kunio: *See*—
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.

Hidaka, Ryoichi: *See*—
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.

Higgins, William A.; and Clark, Alan C., to Lubrizol Corporation, The. Curable epoxy resin compositions. 4,439,594, Cl. 528-89.000.

Higuchi, Tadashi: *See*—
Schwarz, Manfred; and Higuchi, Tadashi, 4,439,743, Cl. 330-267.000.

Higuchi, Takeru, to Merck & Co., Inc. Osmotic drug delivery system. 4,439,196, Cl. 604-890.000.

Hilbert, Samuel D.: *See*—
Sublett, Bobby J.; and Hilbert, Samuel D., 4,439,598, Cl. 528-295.300.

Hildebrand, Dietrich; and Hendricks, Udo W., to Bayer Aktiengesellschaft. Dyeing process with reactive dyes and glycidyl compound. 4,439,206, Cl. 8-543.000.

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Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,438,816, Cl. 166-303.000.

Hines, Enrico D.: *See*—
Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., 4,439,735, Cl. 324-404.000.

Hinshaw, Waldo S.; and Gauss, Robert C., to Technicare Corporation. Distributed phase RF coil. 4,439,733, Cl. 324-322.000.

Hintsa, Roy A.; and Orav, Tonu, to Decoustics Limited. Suspended ceiling panel system. 4,438,613, Cl. 52-484.000.

Hiraga, Noriyuki: *See*—
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Hirakawa, Kazumi: *See*—
Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, 4,439,485, Cl. 428-323.000.

Hirata, Atsumi, to Victor Company of Japan, Ltd. Slow-motion reproducing system in an apparatus for reproducing rotary recording medium with mode dependent skip pulse generator and field memories. 4,439,791, Cl. 358-342.000.

Hiser, Leland L. Method and apparatus for using low grade thermal energy to improve efficiency of air conditioning and refrigeration systems. 4,438,633, Cl. 62-116.000.

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Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Hitachi, Ltd.: *See*—
Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, 4,439,710, Cl. 313-414.000.
Saito, Kouji, 4,438,652, Cl. 73-861.250.
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.

Hitachi Metals, Ltd.: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

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Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Hitzman, Donald O.: *See*—
Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.

HK-Engineering AB: *See*—
Kitsnik, Henrik M., 4,439,112, Cl. 417-383.000.

Hobart Corporation: *See*—
Hadden, James P., 4,439,242, Cl. 134-25.200.

Hobbs, Charles F., to Monsanto Company. Catalyst and reverse disproportionation process. 4,439,626, Cl. 585-435.000.

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Hobbs, Peter D.: *See*—
Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., 4,439,614, Cl. 560-8.000.

Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, to Brown, Boveri & Cie AG. Portable multimeter having two subassemblies with a hinge for folding. 4,439,726, Cl. 324-156.000.

Hodlewsky, Wasyly G.; and Schroeder, Roger H., to Rexnord Inc. Conveyor chain for use with fingered transfer plate. 4,438,838, Cl. 198-853.000.

Hoechst Aktiengesellschaft: *See*—
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,439,331, Cl. 252-8.800.
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, 4,439,361, Cl. 260-141.000.
Kuhls, Jurgen; Weiss, Eduard; and Burgstaller, Gottfried, 4,439,385, Cl. 264-37.000.
Stahlhofen, Paul, 4,439,511, Cl. 430-165.000.

Hoffa, Jack L.: *See*—
Sargeant, John E.; and Hoffa, Jack L., 4,439,189, Cl. 604-317.000.

Hoffarth, Dieter: *See*—
Schaeffer, Gerard; and Hoffarth, Dieter, 4,439,041, Cl. 366-144.000.

Hoffman, Kevin R.: *See*—
Doehler, Joachim; Gattuso, David A.; and Hoffman, Kevin R., 4,438,724, Cl. 118-719.000.

Hoffmann, James E., to Exxon Research & Engineering Company. Process for reducing Zn consumption in zinc electrolyte purification. 4,439,288, Cl. 204-114.000.

Hoffmann-La Roche Inc.: *See*—
Rich, Roland; Villiger, Alois; and Widmer, Erich, 4,439,015, Cl. 350-350.00R.
Ruegg, Rudolf, 4,439,629, Cl. 585-803.000.

Hogan, Elizabeth R. Ostomy bag cover. 4,439,191, Cl. 604-332.000.

Hogg, Fredrick W.: *See*—
Gross, Raymond J.; and Hogg, Fredrick W., 4,439,757, Cl. 340-365.0VL.

Hohenemser, Kurt H., to Gross, Jerome A. Offset-axis windmill having inclined power shaft. 4,439,105, Cl. 416-13.000.

Hokusho, Takayasu: *See*—
Kume, Masaharu; Ishii, Kenichi; and Hokusho, Takayasu, 4,439,771, Cl. 343-704.000.

Holata, Jan: *See*—
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.

Holk, Albert J.; and Pulciani, Sam C., to Continental Group, Inc., The. Container produced by triple drawn method using tin coated steel. 4,439,081, Cl. 413-1.000.
Hollingsworth GmbH: *See—*
Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, 4,438,547, Cl. 19-98.000.
Holly, Evelyn H., executrix: *See—*
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.
Holly, Frederick W., deceased (by Holly, Evelyn H., executrix); Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., to Merck & Co., Inc. Cyclic octapeptide analogs of neurotensin. 4,439,359, Cl. 260-112.50R.
Holonyak, Nick, Jr., to University of Illinois Foundation. Semiconductor device with heterojunction of $Al_xGa_{1-x}As$—AlAs—GaAs. 4,439,782, Cl. 357-17.000.
Hon Corporation: *See—*
Hon, David T., 4,438,942, Cl. 280-278.000.
Hon, David T., to Hon Corporation. Foldable and portable vehicle. 4,438,942, Cl. 280-278.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Gotoh, Oxamu; and Fujimura, Akira, 4,438,627, Cl. 60-278.000.
Nakagawa, Mitsuo, 4,438,828, Cl. 180-219.000.
Sato, Makoto; and Fujii, Etsuo, 4,438,629, Cl. 60-579.000.
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, 4,439,832, Cl. 364-426.000.
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, to Olympus Optical Co., Ltd. Medical capsule device. 4,439,197, Cl. 604-891.000.
Honda Motor Co., Ltd.: *See—*
Hasegawa, Shumpei, 4,438,744, Cl. 123-327.000.
Honegger, Werner, to Ferag AG. Apparatus for stacking printed products, such as newspapers, periodicals and the like, arriving in an imbricated product stream. 4,438,618, Cl. 53-430.000.
Honeywell Inc.: *See—*
Atherton, Jay W., 4,439,738, Cl. 330-10.000.
Doddapaneni, Narayan, 4,439,503, Cl. 429-108.000.
Nelson, Lorne W.; and Torborg, Ralph H., 4,439,139, Cl. 431-20.000.
Roth, Ronald B., 4,439,003, Cl. 350-6.600.
Starr, James B., 4,439,752, Cl. 338-2.000.
Stout, Mark E., 4,439,140, Cl. 431-31.000.
Honshu Seishi Kabushiki Kaisha: *See—*
Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, 4,439,485, Cl. 428-323.000.
Hoogendoorn, Abraham: *See—*
Haubrich, Peter; Hoogendoorn, Abraham; and Jahnke, Uwe, 4,439,799, Cl. 360-77.000.
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., to Estel Hoogovens B.V. Temperature scanner. 4,439,049, Cl. 374-124.000.
Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., to Baxter Travenol Laboratories, Inc. Stabilized gamma globulin concentrate. 4,439,421, Cl. 424-85.000.
Hoover, Lonnie D.: *See—*
House, Roy F.; and Hoover, Lonnie D., 4,439,333, Cl. 252-8.55R.
Hoover Universal, Inc.: *See—*
Goedken, James H., 4,439,072, Cl. 406-91.000.
Hope, Robert B.: *See—*
Nielson, Erik I.; and Hope, Robert B., 4,438,609, Cl. 52-208.000.
Hoppe, David R., to Motorola Inc. Time interpolator. 4,439,046, Cl. 368-120.000.
Horie, Yoshihiro: *See—*
Hanamoto, Hiroyuki; and Horie, Yoshihiro, 4,439,143, Cl. 432-36.000.
Horiuchi, Hiroshi: *See—*
Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, 4,439,027, Cl. 353-77.000.
Hosking, Steven M.: *See—*
Jenkins, Stuart M.; and Hosking, Steven M., 4,439,083, Cl. 414-46.000.
Hosoda, Yuji: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.
Hosoya, Kensei: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.
Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, to Matsushita Electric Industrial Co., Ltd. Polymeric thermo-sensitive material. 4,439,569, Cl. 524-128.000.
Hotzel, Dieter, to Dr. Madaus & Co. Medicament for diminution of oxalate development and excretion in urine. 4,439,449, Cl. 424-317.000.
Hough Industries Limited: *See—*
Hough, John A., 4,438,565, Cl. 30-341.000.
Hough, John A., to Hough Industries Limited. Handle for a hand tool. 4,438,565, Cl. 30-341.000.
House, Roy F.; and Hoover, Lonnie D., to NL Industries, Inc. Heavy brine viscosifiers. 4,439,333, Cl. 252-8.55R.
Houseman, Kenneth R., to General Dental, Inc. Electrolytic metal reclamation device. 4,439,299, Cl. 204-271.000.
Houseman, Kenneth R., to General Dental, Inc. Vortex type metal collector. 4,439,300, Cl. 204-272.000.
Hoveler, Egon: *See—*
Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jurgen, 4,439,262, Cl. 156-364.000.
Howard Machinery Limited: *See—*
von Allworden, Wilhelm, 4,438,690, Cl. 100-116.000.
Hoya Corporation: *See—*
Tajima, Hidemi, 4,439,530, Cl. 501-45.000.
Hozeski, Kenneth W.: *See—*
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,438,898, Cl. 248-561.000.
Huang, Shing S. J. Valvular infusion device. 4,439,182, Cl. 604-85.000.
Hubeie, Adolf, to Ciba-Geigy Corporation. Fungicidal acyl anilides. 4,439,447, Cl. 424-309.000.
Hudgens, Stephen J.: *See—*
Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., 4,438,723, Cl. 118-718.000.
Hughes Aircraft Company: *See—*
Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., 4,439,840, Cl. 364-900.000.
Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., 4,439,266, Cl. 156-614.000.
Hunsperger, Robert G.; and Shifrin, Gordon A., 4,439,004, Cl. 350-96.120.
Kreinheder, Donald E.; and Lingren, Terrance D., 4,439,747, Cl. 333-208.000.
Lucas, Charles H.; and Lewyn, Lanny L., 4,439,693, Cl. 307-353.000.
Wilmot, Richard D., 4,439,765, Cl. 343-6.00A.
Hughes, John B.: *See—*
Beckmans, Jan J. P. M.; and Hughes, John B., 4,439,692, Cl. 307-297.000.
Hughes, Larry M., to RCA Corporation. Disc player having record handling apparatus. 4,439,852, Cl. 369-77.200.
Hughes Tool Company: *See—*
McFadden, Edward J., 4,438,910, Cl. 267-126.000.
Timme, Albert C., Jr., 4,438,953, Cl. 285-93.000.
Hugl, Herbert; Wolfrum, Gerhard; and Lehmeat, Klaus-Friedrich, to Bayer Aktiengesellschaft. Process for the preparation of styryl dyestuffs. 4,439,372, Cl. 260-465.00E.
Humenik, James N.: *See—*
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.
Hung, John H., to International Paper Company. Polymeric sheets. 4,439,391, Cl. 264-317.000.
Hunsperger, Robert G.; and Shifrin, Gordon A., to Hughes Aircraft Company. Optical waveguide and modulator and process for fabricating same. 4,439,004, Cl. 350-96.120.
Hunt, Frederick J. Portable ice fishing enclosure. 4,438,940, Cl. 280-12.00S.
Hunter Douglas International N.V.: *See—*
Vecchiarelli, Francis, 4,438,897, Cl. 248-544.000.
Hunter, James B. Sketching aid. 4,439,159, Cl. 434-85.000.
Husky Injection Molding Systems Ltd.: *See—*
Rees, Herbert; Brown, Paul; and Grund, Miroslaw, 4,439,133, Cl. 425-556.000.
Hussels, Bernard H.; and Goetz, Charles T., to DBI Industries, Inc. Load cell. 4,438,823, Cl. 177-210.0EM.
Hutcheon, Alfred J., to NCR Corporation. Cassette for currency notes or other valuable articles. 4,438,704, Cl. 109-44.000.
Hutter, Wilhelm: *See—*
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.
Hylla, Gary F. Pistol maintenance device. 4,438,913, Cl. 269-60.000.
I.C.I. Francolor S.A.: *See—*
Pigasse, Daniel, 4,439,238, Cl. 106-20.000.
I M L Corporation: *See—*
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,439,381, Cl. 264-26.000.
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, to Olympus Optical Co., Ltd. Optical system for ophthalmological instruments. 4,439,023, Cl. 351-206.000.
ICI Australia Limited: *See—*
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.
Ideal Security Hardware Corporation: *See—*
Waldo, Russell W.; and Miller, Cardel E., 4,438,544, Cl. 16-85.000.
Iden, Marlin: *See—*
Kramer, Melvin G.; and Iden, Marlin, 4,438,568, Cl. 33-348.000.
Ife, Robert J.: *See—*
Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., 4,439,435, Cl. 424-251.000.
Igarashi, Kenichi: *See—*
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.
Iida, Yoshiaki: *See—*
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.
Iimori, Takayuki, to Sanden Corporation. Orbiting fluid displacement apparatus with counterweight attachment. 4,439,118, Cl. 418-55.000.
Iimura, Tsutomu: *See—*
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Ikeda, Sunao: *See*—
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.

Ikeda, Takeshi: *See*—
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.

Ikeda, Tomoaki: *See*—
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.

Ikeda, Toshiaki: *See*—
Makino, Takao; and Ikeda, Toshiaki, 4,439,868, Cl. 378-112.000.

Ikehara, Yasunobu: *See*—
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.

Ikemoto, Yoshiyuki: *See*—
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, 4,439,605, Cl. 536-71.000.

Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, to Nissan Motor Co., Ltd. Method of supplying fuel to an internal combustion engine during start-up. 4,438,748, Cl. 123-491.000.

Ikeura, Kenji: *See*—
Yamaguchi, Hiroshi; and Ikeura, Kenji, 4,439,833, Cl. 364-431.090.

Iles, Gordon D.: *See*—
Claydon, Gyongyver; and Iles, Gordon D., 4,439,786, Cl. 358-148.000.

Ilyasova, Nazaket M. K.: *See*—
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Imai, Hirosobu, to NSK-Warner K.K. Locking device for vehicle seat belt webbing. 4,438,551, Cl. 24-68.0SB.

Imai, Takeshi; and Kako, Naohiro, to Nippondenso Co., Ltd. Process for production of heat resistant insulated electric wire and cable. 4,439,255, Cl. 156-49.000.

Im Han, Kyoung R., to Stauffer Chemical Company. Supported catalyst for polymerizing olefins. 4,439,538, Cl. 502-105.000.

Imperial Chemical Industries PLC: *See*—
Cox, John M., 4,439,428, Cl. 424-200.000.

Industrial Design & Development Corp.: *See*—
Mayne, David L.; and Jahsman, David, 4,438,867, Cl. 221-197.000.

Ing. C. Olivetti & C., S.p.A.: *See*—
Aprato, Armando, 4,439,777, Cl. 346-76.0PH.
Bovio, Michele; Sella, Lino; Berruti, Pierangelo; Gillone, Walter; and Ceresa, Luciano, 4,439,779, Cl. 346-140.0PD.
Forlani, Riccardo, 4,438,722, Cl. 118-657.000.

Ing. Rudolf Hell GmbH: *See*—
Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, 4,439,022, Cl. 350-572.000.

Ingram Corporation: *See*—
Frias, Robert, 4,439,091, Cl. 414-745.000.

Innovatec, Inc.: *See*—
Perez, Simon A., 4,438,686, Cl. 99-353.000.

Inokuma, Toshio: *See*—
Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, 4,439,352, Cl. 252-518.000.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,439,660, Cl. 219-69.00M.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electroerosive contour-machining method and apparatus with a rotary tool electrode. 4,439,660, Cl. 219-69.00M.

Inoue, Masuo: *See*—
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, to Mitsui Toatsu Chemicals, Inc. Process for injection molding polyolefin resin compositions. 4,439,567, Cl. 524-108.000.

Inoue, Tokuta: *See*—
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,438,741, Cl. 123-188.00M.

Insituform International N.V.: *See*—
Wood, Eric, 4,439,469, Cl. 427-230.000.

Institut Fiziki Akademii Nauk Belorusskoi SSR: *See*—
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Instytut Obrobki Plastycznej: *See*—
Rut, Tadeusz, 4,438,644, Cl. 72-356.000.

Instytut Przemyslu Farmaceutyoznego Majakowskiego: *See*—
Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Intech Systems Corp.: *See*—
Slavin, Martin J., 4,438,772, Cl. 128-715.000.

Intermountain Thermafloor: *See*—
Graham, Charles H., 4,439,666, Cl. 219-213.000.

International Business Machines Corporation: *See*—
Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, 4,439,250, Cl. 148-23.000.
Boyle, David H., 4,439,727, Cl. 324-158.00R.
Brende, Arthur P.; and Luoma, Richard W., 4,439,699, Cl. 310-13.000.
Daniels, Raymond A., 4,439,034, Cl. 355-3.0DD.
Donnan, Robert A., 4,439,859, Cl. 371-32.000.
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.
Gendler, Paul L.; and Twieg, Robert J., 4,439,280, Cl. 204-2.000.
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.
Malaviya, Sashi D., 4,439,842, Cl. 365-104.000.
Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., 4,439,690, Cl. 307-272.00R.
Martin, Daniel B., 4,439,828, Cl. 364-200.000.
Mulzet, Alfred P., 4,439,178, Cl. 494-85.000.
Pavone, Peter J.; and Van Demark, Richard D., 4,439,261, Cl. 156-345.000.
Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, 4,439,270, Cl. 156-644.000.
Seelinger, Hugh D., 4,438,888, Cl. 242-56.900.

International Flavors & Fragrances Inc.: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.

International Mobile Machines Corp.: *See*—
Seligsohn, Scott; Bolgiano, Duane R.; and Seligsohn, Sherwin I., 4,439,638, Cl. 179-84.00C.

International Nickel Company, Inc., The: *See*—
Sadowski, Edward P., 4,439,498, Cl. 428-558.000.

International Paper Company: *See*—
Hung, John H., 4,439,391, Cl. 264-317.000.

International Telephone & Telegraph Corp.: *See*—
Brown, Albert W., 4,438,793, Cl. 141-382.000.
Close, Anthony D.; and Menn, Walter A., 4,439,815, Cl. 361-386.000.
Johnson, Robert E., 4,439,774, Cl. 343-912.000.
Kneib, Kristine N.; and Vensko, George, 4,439,839, Cl. 364-900.000.
Lawrence, Alan J.; and Upp, Daniel C., 4,439,826, Cl. 364-200.000.
Shenoi, Kishan; and Agrawal, Bhagwati P., 4,439,756, Cl. 340-347.0AD.

Intertractor Viehmann GmbH & Co.: *See*—
Harms, Hans-Wilhelm, 4,438,981, Cl. 305-14.000.

Inventio AG: *See*—
Borter, Ephraim, 4,439,655, Cl. 200-340.000.

Investment Rarities, Incorporated: *See*—
Burandt, Corliss O., 4,438,735, Cl. 123-90.160.
Burandt, Corliss O., 4,438,737, Cl. 123-90.170.

Iomega Corporation: *See*—
Powell, Steven H., 4,439,800, Cl. 360-78.000.

Iowa Beef Processors, Inc.: *See*—
Couture, William F., 4,438,546, Cl. 17-50.000.

Irii, Shinsuke; and Shiozaki, Tomoharu, to Kanzaki Paper Manufacturing Co., Ltd. Method for the production of microcapsules. 4,439,581, Cl. 524-839.000.

Irving, Edward; and Green, George E., to Ciba-Geigy Corporation. Acrylate-containing compositions and their polymerization. 4,439,291, Cl. 204-159.230.

Irving, Edward, to Ciba-Geigy Corporation. Process for the formation of images with epoxide resin. 4,439,517, Cl. 430-328.000.

Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Chlorination of hydroquinone. 4,439,596, Cl. 528-191.000.

Ishida, Masamitsu: *See*—
Kato, Hisatoyo; and Ishida, Masamitsu, 4,439,866, Cl. 378-19.000.

Ishida, Mitsushi: *See*—
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.

Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and color electrophotographic process. 4,439,504, Cl. 430-42.000.

Ishii, Kenichi: *See*—
Kume, Masaharu; Ishii, Kenichi; and Hokusho, Takayasu, 4,439,771, Cl. 343-704.000.

Ishikura, Tomoyuki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Ishizaki, Nobuhiro: *See*—
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, 4,439,153, Cl. 433-200.000.

Isuzu Kogyo Kabushiki Kaisha: *See*—
Hattori, Tadashi, 4,438,954, Cl. 285-104.000.

Ito, Hiroshi: *See*—
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.

Ito, Norio: *See*—
Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, 4,439,027, Cl. 353-77.000.

Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, to Canon Kabushiki Kaisha. Original aligning device. 4,438,918, Cl. 271-251.000.

Ito, Yuji, to Canon Kabushiki Kaisha. Eye examining instrument with variable intensity of illumination light. 4,439,024, Cl. 351-207.000.

Itoh, Hideo; and Yamauchi, Takahiko, to Fujitsu Limited. Semiconductor memory devices. 4,439,841, Cl. 365-51.000.

Itoh, Isamu: *See*—
Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, 4,439,519, Cl. 430-405.000.
Ivlev, Anatoly D.: *See*—
Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., 4,439,702, Cl. 310-80.000.
Ivory, Dawn M.: *See*—
Patel, Gordhanbhai N.; and Ivory, Dawn M., 4,439,346, Cl. 252-408.100.
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, to Kawasaki Steel Corporation. Method of producing grain-oriented silicon steel sheets having excellent magnetic properties. 4,439,252, Cl. 148-111.000.
Iwamoto, Yoshinori: *See*—
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,439,560, Cl. 523-437.000.
Iwamura, Kazuyuki: *See*—
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, 4,438,759, Cl. 126-433.000.
Iwasaki, Hiroshi: *See*—
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Iwasaki, Shinichiro, to Aisin Seiki Kabushiki Kaisha. High voltage generating circuit for an automotive ignition system. 4,438,751, Cl. 123-606.000.
Izu, Masatsugu: *See*—
Cannella, Vincent D.; Izu, Masatsugu; and Hudgens, Stephen J., 4,438,723, Cl. 118-718.000.
Izumimori, Hajime: *See*—
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
J. C. Ludowici & Son Ltd.: *See*—
Lees, Geoffrey C., 4,438,935, Cl. 277-205.000.
J. T. Eaton & Company, Inc.: *See*—
Baker, Stanley Z.; and Baker, Benjamin H., 4,438,584, Cl. 43-58.000.
Jackel, Janet L.: *See*—
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.
Jackson, David A., Jr., to United States of America, Army. Vapor-phase method for growing mercury cadmium telluride. 4,439,267, Cl. 156-614.000.
Jackson, William S. Helmet restraining device. 4,438,877, Cl. 224-275.000.
Jacob, Joseph; and Love, Charles J. Toothbrush with heat shrunk synthetic filaments. 4,438,541, Cl. 15-167.00R.
Jacoby, Jerold L.: *See*—
Hefley, Richard M.; Tomren, Douglas R.; and Jacoby, Jerold L., 4,439,767, Cl. 343-18.00E.
Jacquier, Robert: *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.
Jaeger, Rudolf: *See*—
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.
Jagenberg AG: *See*—
Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jurgen, 4,439,262, Cl. 156-364.000.
Jagenberg Werke AG: *See*—
Schonmeier, Herbert, 4,438,889, Cl. 242-67.10R.
Jahnke, Uwe: *See*—
Haubrich, Peter; Hoogendoorn, Abraham; and Jahnke, Uwe, 4,439,799, Cl. 360-77.000.
Jahsman, David: *See*—
Mayne, David L.; and Jahsman, David, 4,438,867, Cl. 221-197.000.
Jain, Kanti: *See*—
Archer, Michael C.; and Jain, Kanti, 4,439,521, Cl. 435-1.000.
Jakob, Hans: *See*—
Altermatt, Ruedi; and Jakob, Hans, 4,439,207, Cl. 8-639.000.
Jakobi, Wilhelm, to Krupp-Koppers GmbH. Arrangement for dry cooling of coke. 4,438,571, Cl. 34-65.000.
Jakusch, Helmut: *See*—
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
Jankovics, Endre: *See*—
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.
Janome Sewing Machine Co., Ltd.: *See*—
Koide, Akio; and Ebata, Yoshikazu, 4,438,716, Cl. 112-168.000.
Janome Sewing Machine Industry Co., Ltd.: *See*—
Hanyu, Susumu, 4,438,718, Cl. 112-274.000.
Janssen, Curtis R.: *See*—
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., to International Business Machines Corporation. Dual motor aligner. 4,438,917, Cl. 271-227.000.
Janssen Pharmaceutica N.V.: *See*—
Ballany, John M.; and Henderson, David, 4,439,439, Cl. 424-270.000.
Japax Incorporated: *See*—
Shimizu, Akihiko, 4,439,659, Cl. 219-69.00V.
Jaquay, Louis H.; and Mengon, Albert C., deceased (by Mengon, Mary A., administratrix), to Dravo Corporation. Heating process gas for indirect shale oil retorting through the combustion of residual carbon in oil depleted shale. 4,439,307, Cl. 208-11.00R.
Jarrell, Donald, to Jarrell, Donald; Logan, John G., III; and Carpenter, Richard H., a part interest. Sewage treatment system. 4,439,317, Cl. 210-151.000.
Jarvis, Marvin A.: *See*—
McCurdy, J. L.; and Jarvis, Marvin A., 4,439,601, Cl. 528-481.000.
Jaskiewicz, Edmund M.: *See*—
Bruney, Paul F., III, 4,439,644, Cl. 179-146.00E.
Jechel, Kurt E.: *See*—
Schutzler, Jerome C.; and Jechel, Kurt E., 4,439,392, Cl. 264-511.000.
Jenkins, Stuart M.; and Hosking, Steven M., to De La Rue Systems Limited. Automatic sheet dispensing apparatus. 4,439,083, Cl. 414-46.000.
Jennings, Roger L.: *See*—
Serrianne, Russell A.; and Jennings, Roger L., 4,438,693, Cl. 101-129.000.
Jennings, Uel D., to Du Pont de Nemours, E. I., and Company. Polyester/nylon bicomponent filament. 4,439,487, Cl. 428-397.000.
Jensen, Jorn M., to Ejnar Jensen & Son A/S. Apparatus for folding sheet material, preferably laundry. 4,439,176, Cl. 493-419.000.
Jeol Ltd.: *See*—
Norioka, Setsuo; and Date, Naoki, 4,439,681, Cl. 250-310.000.
Jetline Engineering, Inc.: *See*—
Arter, William L., 4,439,665, Cl. 219-124.020.
Toohey, William J., 4,439,664, Cl. 219-124.020.
Johansen, David K.: *See*—
Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., 4,439,719, Cl. 320-31.000.
Johansson, Jan H., to Telefonaktiebolaget L M Ericsson. Overvoltage guard for electronic circuits. 4,439,802, Cl. 361-56.000.
Johnan Seisakusho Company, Limited: *See*—
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.
Johnson, Alexander L., to Du Pont de Nemours, E. I., and Company. Process for preparing antihypertensive 1-substituted cyclic lactam-2-carboxylic acids and their derivatives. 4,439,364, Cl. 260-239.30R.
Johnson, Calvin K.; and Armbruster, David R., to Acme Resin Corporation. Particles covered with a cured infusible thermoset film and process for their production. 4,439,489, Cl. 428-404.000.
Johnson, Cary P.; and Sokaris, Jerry G., to Albany International Corp. Resole treated papermakers felt and method of fabrication. 4,439,481, Cl. 428-235.000.
Johnson, Gregory. Obstruction clearing apparatus for mining conveyors. 4,438,841, Cl. 198-524.000.
Johnson, Jeffrey O., to Nike, Inc. Athletic shoe with two-piece upper forepart section. 4,438,574, Cl. 36-45.000.
Johnson, Jerome L., to Centronics Data Computer Corp. Multiple speed printer. 4,439,775, Cl. 346-75.000.
Johnson, Martin D., to Electronic Equipment Development Ltd. High speed welder with magnetic alignment of welding slug after cutting. 4,438,670, Cl. 83-154.000.
Johnson, Paul E. Nutcracker. 4,438,688, Cl. 99-574.000.
Johnson, R. Shannon: *See*—
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.
Johnson, Robert E., to International Telephone and Telegraph Corporation. Antenna reflector with triangulated cellular back structure. 4,439,774, Cl. 343-912.000.
Johnson, Russell W.: *See*—
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,438,816, Cl. 166-303.000.
Johnston, Christian W.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,439,583, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,584, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,585, Cl. 525-127.000.
Jolly, Henry. Mining machinery. 4,438,821, Cl. 175-74.000.
Jolly, William D.: *See*—
Singh, Gurvinder P.; and Jolly, William D., 4,439,249, Cl. 148-9.00R.
Jones, Cynthia G.: *See*—
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.
Jones, Darrell L.: *See*—
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.
Jones, Edward M., Jr., to Chemical Research & Licensing Company. Contact structure for use in catalytic distillation. 4,439,350, Cl. 502-527.000.
Jones, Glenn C.: *See*—
Douglas, Ted L.; Clonce, Ambrose J.; and Jones, Glenn C., 4,439,278, Cl. 203-9.000.
Jones, Johnnie; Einig, Joseph A.; and Ackerson, Arthur T. Removable barrier assembly. 4,438,596, Cl. 49-463.000.
Jones, Martin; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 2-[-Thiazolyl or 2-guanidino-4-thiazolyl methylthioethyl(or butyl)amino]-3-(hydroxy or carboxy)pyridines, compositions containing same and method of use. 4,439,437, Cl. 424-263.000.

Jones, Richard E.: *See*—
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.
Jones, Thomas J.; and Curtis, David S., to Rolls Royce Limited. Joining of components. 4,438,956, Cl. 285-223.000.
Jones, Thomas M.: *See*—
Boles, Jeffrey L.; and Jones, Thomas M., 4,439,223, Cl. 71-30.000.
Jones, Thomas R.: *See*—
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.
Jones, Wesley C.: *See*—
Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., 4,439,163, Cl. 440-86.000.
Joo' , Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., to Great Lakes Carbon Corporation. Titanium diboride-graphite composites. 4,439,382, Cl. 264-29.500.
Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., to U.S. Philips Corporation. Optical fiber of the graded index type and method of producing same. 4,439,008, Cl. 350-96.310.
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, to U.S. Philips Corporation. Glass and glass objects. 4,439,529, Cl. 501-45.000.
Jorksten Research Laboratories, Inc.: *See*—
Schenk, Roy U., 4,439,522, Cl. 435-188.000.
Jung, Michel: *See*—
Bey, Philippe; Gerhart, Fritz; and Jung, Michel, 4,439,619, Cl. 560-169.000.
Jung, Siegfried: *See*—
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.
Jurgensen, Heinrich: *See*—
Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, 4,439,022, Cl. 350-572.000.
Justice, David D.: *See*—
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.
JWI Ltd.: *See*—
MacBean, Donald G., 4,438,789, Cl. 139-383.00A.
Kabushiki Kaisha Endo Seisakusho: *See*—
Motomiya, Tetsuo, 4,438,931, Cl. 273-167.00H.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.
Sano, Tsutomu; Takeuchi, Naoki; and Kurumaji, Masanobu, 4,439,123, Cl. 425-112.000.
Kabushiki Kaisha Matsushiro: *See*—
Matsushiro, Yukimitsu, 4,438,589, Cl. 46-251.000.
Kabushiki Kaisha Mino Seisakusho: *See*—
Mino, Masao; and Ohno, Takeshi, 4,438,887, Cl. 242-43.200.
Kabushiki Kaisha Morita Seisakusho: *See*—
Makino, Takao; and Ikeda, Toshiaki, 4,439,868, Cl. 378-112.000.
Kabushiki Kaisha Orii Jidoki Seisakusho: *See*—
Ajisaka, Yasuo, 4,439,092, Cl. 414-752.000.
Kabushiki Kaisha Sato: *See*—
Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, 4,439,257, Cl. 156-64.000.
Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.
Kadota, Osamu: *See*—
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.
Kaehler, Dieter, to Alfa-Laval Agrar GmbH. Heat exchanger for transferring heat to a liquid. 4,438,806, Cl. 165-108.000.
Kaercher, William C., Jr., to Turfco Manufacturing, Inc. Ground driven top dresser utilizing special clutch mechanism. 4,438,873, Cl. 222-616.000.
Kagata, Tooru, to Aisin Seiki Kabushiki Kaisha. Freewheel hub assembly. 4,438,836, Cl. 192-36.000.
Kagawa, Yoshii, to Alps Electric Co., Ltd. Thick film printed circuit. 4,439,753, Cl. 338-325.000.
Kahn, Merle S., to Reynolds Metals Company. Membrane closure structure. 4,438,850, Cl. 206-634.000.
Kaiyo Koggyo Co. Ltd.: *See*—
Kozima, Sadao; and Makino, Hisao, 4,439,316, Cl. 210-150.000.
Kakitani, Yohtaro: *See*—
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.
Kakizaki, Shozo: *See*—
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.
Kako, Naohiro: *See*—
Imai, Takeshi; and Kako, Naohiro, 4,439,255, Cl. 156-49.000.
Kalokhe, Shivdas A., to Ex-Cell-O Corporation. Boring tool with coarse and fine adjustment. 4,439,074, Cl. 408-178.000.
Kambara, Koji: *See*—
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.
Kamber, Bruno: *See*—
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.
Kamijo, Ken; and Maeda, Kouzo, to Nissan Motor Co., Ltd. Collision resistant construction for a door of a vehicle. 4,438,969, Cl. 296-146.000.
Kaminski, Daniel S., to Lincoln Manufacturing Co., Inc. Heat duct support assembly for a food preparation oven and method. 4,438,572, Cl. 34-218.000.
Kamman, Joseph T.; and Kohring, Mark D., to Cincinnati Milacron Inc. Vibration damper for machine-carried workpiece. 4,438,599, Cl. 51-238.00S.
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, to Nippon Suisan Kabushiki Kaisha. Process for producing fibrous food products. 4,439,456, Cl. 426-276.000.
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, to Teijin Limited. Slippery biaxially stretched polyester films. 4,439,479, Cl. 428-148.000.
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, to Central Glass Company Limited. Method of producing thin sheet glass of high quality by float process. 4,439,222, Cl. 65-99.200.
Kaneko, Tamaki: *See*—
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, 4,439,865, Cl. 377-8.000.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Irii, Shinsuke; and Shiozaki, Tomoharu, 4,439,581, Cl. 524-839.000.
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Kao Soap Co., Ltd.: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.
Kapaan, Hendrikus J., to SKF Industrial Trading & Development Company B.V. Magnetic bearing system. 4,438,987, Cl. 308-10.000.
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, to Hoechst Aktiengesellschaft. Process for controlling diazotization reactions involving nitrous reactant by testing the air above the reaction batch for its content of nitrous gases and feeding nitrous reactant in accordance with said content. 4,439,361, Cl. 260-141.000.
Kashiwaba, Tadao: *See*—
Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, 4,439,257, Cl. 156-64.000.
Kassahun, Bahiru; and Viriyayuthakorn, Montri, to Western Electric Company, Inc. Methods of coating lightguide fiber and product produced thereby. 4,439,467, Cl. 427-163.000.
Kastelic, John R.: *See*—
Kim, Sang N.; and Kastelic, John R., 4,439,578, Cl. 524-538.000.
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, to Nissan Motor Company, Limited; and Johnan Seisakusho Company, Limited. Operating mechanism for operating a sliding and tilting roof-panel. 4,438,972, Cl. 296-223.000.
Kato Hatsujyo Kaisha Ltd.: *See*—
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.
Kato, Hisatoyo; and Ishida, Masamitsu, to Fuji Photo Film Co., Ltd. Arbitrary layer tomographic method and apparatus. 4,439,866, Cl. 378-19.000.
Kato, Takashi, to Eltac Co. Ltd.; and Tokai Industrial Sewing Machine Co. Ltd., part interest to each. Embroidery stitch formation device for sewing machine. 4,438,713, Cl. 112-100.000.
Kato, Younosuke: *See*—
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, 4,439,605, Cl. 536-71.000.
Katsuno, Mitsuaki: *See*—
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.
Kauffman, Glenn A., to AMF Inc. Nondestructive inspection apparatus and method utilizing combined inspection signals obtained from orthogonal magnetic fields. 4,439,730, Cl. 324-232.000.
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., to AMP Incorporated. Surface mount/daughter board connector. 4,439,000, Cl. 339-176.0MP.
Kaustrater, Gert, to Kuka Webrtechnik GmbH. Ammunition container. 4,438,676, Cl. 89-34.000.
Kautz, Allan D.: *See*—
Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., 4,439,735, Cl. 324-404.000.
Kawaguchi, Shoichi, to Komori Printing Machinery Co., Ltd. Paper feeder. 4,438,916, Cl. 271-93.000.
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, to Wada Seimitsu Shiken Kabushiki Kaisha. Bio-functional denture. 4,439,153, Cl. 433-200.000.
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., to Union Carbide Corporation. Process for preparing polyarylates. 4,439,586, Cl. 525-169.000.
Kawamata, Kiyoshi, to Nihon Seikan Kabushiki Kaisha. Sealant applying apparatus for can body blanks. 4,438,721, Cl. 118-249.000.
Kawamura, Hiroshi; and Mibae, Giro, to Toray Industries, Incorporated. Coating compositions. 4,439,557, Cl. 523-216.000.
Kawano, Yoshihiko: *See*—
Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, 4,439,485, Cl. 428-323.000.
Kawasaki Steel Corporation: *See*—
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.
Kawata, Ken: *See*—
Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, 4,439,519, Cl. 430-405.000.
Kays, William B.: *See*—
Wilson, John V.; and Kays, William B., 4,438,863, Cl. 220-227.000.
Kehr, Clifton L.: *See*—
Guthrie, James L.; and Kehr, Clifton L., 4,439,553, Cl. 521-159.000.

Keiper Automobiltechnik GmbH & Co. KG: *See*—
Pelz, Herbert, 4,439,053, Cl. 403-101.000.
Keiper U.S.A., Inc.: *See*—
Kresky, Fred C.; and Boyer, Daniel R., 4,438,974, Cl. 297-379.000.
Kelly, John, Jr.; and Edelbrock, Gregory J., to Mobil Oil Corporation. Method and apparatus for disposing of drill cuttings at an offshore location. 4,439,069, Cl. 405-195.000.
Kelly, Joseph E., to United States of America, Navy. Isolation steam valve with atmospheric vent and relief capability. 4,438,782, Cl. 137-628.000.
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., to Mobay Chemical Corporation. Polyurethane compositions with improved storage stability. 4,439,593, Cl. 528-45.000.
Kenkare, Divaker B., to Colgate-Palmolive Company. Elastic detergent product of improved foaming power after use. 4,439,355, Cl. 252-541.000.
Kenney Manufacturing Company: *See*—
Comeau, Paul E., 4,438,799, Cl. 160-263.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, 4,439,684, Cl. 250-396.00R.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Heilgeist, Michael, 4,439,326, Cl. 210-757.000.
Kesselman, Howard: *See*—
Kesselman, Jacob; and Kesselman, Howard, 4,438,844, Cl. 206-287.100.
Kesselman, Jacob; and Kesselman, Howard. Traveling garment bag. 4,438,844, Cl. 206-287.100.
Kessler, John O., to University of Arizona Foundation, The. Algal cell growth, modification and harvesting. 4,438,591, Cl. 47-1.400.
Kettelson, Ernest: *See*—
Slatton, B. Dale, 4,438,585, Cl. 43-113.000.
Keyes, George B.; and Richards, Randall G., to Drackett Company, The. Passive dispenser. 4,438,534, Cl. 4-227.000.
Keys, Deborah A.: *See*—
Magill, Thomas S.; and Keys, Deborah A., 4,439,147, Cl. 433-3.000.
KG Spezialmaschinenfabrik: *See*—
Stengle, Rolf; and Grupp, Rolf, 4,438,914, Cl. 270-31.000.
Khanna, Pyare; and Colvin, Warren, to Syva Company. Unsymmetrical fluorescein derivatives. 4,439,356, Cl. 260-112.00R.
Kidde Recreation Products, Inc.: *See*—
Simonds, Gary, 4,438,753, Cl. 124-24.00R.
Kiguchi, Majime, to Tokyo Shibaura Denki Kabushiki Kaisha. Turntable lifting apparatus of a video disc player. 4,439,851, Cl. 369-77.200.
Kikuchi, Hideo; Kaneko, Tamaki; Hibi, Kunio; Ikeda, Sunao; and Kakitani, Yohtaro, to Ricoh Company, Ltd. Copier sorter with memory and counter controlled inlet gate for manually inserted covers or partition sheets. 4,439,865, Cl. 377-8.000.
Kikuzawa, Kenji; and Akasaka, Shozo, to Asahi Kasei Kogyo Kabushiki Kaisha. Artificial reef unit. 4,439,059, Cl. 405-25.000.
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., to U.S. Philips Corporation. Circuit arrangement with electronically controllable transfer characteristic. 4,439,739, Cl. 330-107.000.
Kim, Jinchoon, to United States of America, Energy. Neutral beamline with improved ion energy recovery. 4,439,395, Cl. 376-130.000.
Kim, Sang N.; and Kastelic, John R., to Celanese Corporation. Use of liquid crystal polymer particulates having a high aspect ratio in polymeric molding resins to suppress melt dripping. 4,439,578, Cl. 524-538.000.
Kimmell, Garman O. Pumping system. 4,439,114, Cl. 417-403.000.
Kimura, Kiyoshi: *See*—
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.
Kimura, Kouhei: *See*—
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, to Nippon Kokan Kabushiki Kaisha. Gas blowing nozzle, and production and usage thereof. 4,438,907, Cl. 266-217.000.
Kimura, Takeshi: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Kimura, Tomohiro: *See*—
Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, 4,439,258, Cl. 156-86.000.
Kimwood Corporation: *See*—
Plough, Irving L., 4,438,795, Cl. 144-373.000.
Kindrick, Robert H., to Sherwin-Williams Company, The. Zinc oxide-zinc salt smoke suppressant/flame retardants. 4,439,572, Cl. 524-405.000.
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., to National ICEE Corporation. Apparatus for popping popcorn. 4,438,682, Cl. 99-323.700.
King, Roderick V., to Ethyl Products Company. Apparatus for threading closures. 4,439,082, Cl. 413-56.000.
Kingsbury, Robert P., to American Colloid Co. Sealing system and method for sealing earthen containers. 4,439,062, Cl. 405-24.000.
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., to Olin Corporation. Monopolar membrane electrolytic cell. 4,439,297, Cl. 204-257.000.
Kiselevsky, Leonid I.: *See*—
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
Kishimoto, Yoshio: *See*—
Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,439,569, Cl. 524-128.000.
Kispert, Klaus: *See*—
Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,438,992, Cl. 308-201.000.
Kiss, Gunter H., to Lignotock Verfahrenstechnik GmbH. Fiber mat for producing a three dimensional molded molding by the dry process. 4,439,477, Cl. 428-102.000.
Kisters, Gunter, to Kollmorgen Technologies Corporation. Method for producing multiplane circuit boards. 4,438,560, Cl. 29-830.000.
Kitahara, Nobuko: *See*—
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.
Kitajima, Nobuo: *See*—
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, to Matsushita Electric Industrial Co., Ltd. Heat-pipe type solar water heater. 4,438,759, Cl. 126-433.000.
Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,439,795, Cl. 360-131.000.
Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,439,796, Cl. 360-131.000.
Kitatani, Seizo: *See*—
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.
Kitsnik, Henrik M., to HK-Engineering AB. Method and apparatus for pumping viscous and/or abrasive fluids. 4,439,112, Cl. 417-383.000.
Kittle, Carl E., to Deere & Company. Dual mode control lever assembly. 4,438,660, Cl. 74-531.000.
Klauke, Erich; and Grohe, Klaus, to Bayer Aktiengesellschaft. 2,4-Dichloro-5-fluorobenzoyl halide and a process for its preparation. 4,439,620, Cl. 562-493.000.
Kleiner, Eduard K.; and Falk, Robert A., to Ciba-Geigy Corporation. Aqueous based fire fighting foam compositions containing hydrocarbyl sulfide terminated oligomer stabilizers. 4,439,329, Cl. 252-8.050.
Kline, Larry H. Flowable substance applicator with plunger projection. 4,439,180, Cl. 604-54.000.
Klingenberg, Wolfgang, to Olympia Werke AG. One line text display with two input locations. 4,439,838, Cl. 364-900.000.
Klotz, Helmut; and Fitzky, Hans G., to Bayer Aktiengesellschaft. Treatment of perfluorinated polymer membranes containing carboxyl groups. 4,439,292, Cl. 204-165.000.
Knapp, Charles A., to United States of America, Army. White smoke spotting composition for training ammunition. 4,438,700, Cl. 102-334.000.
Kneib, Kristine N.; and Vensko, George, to International Telephone and Telegraph Corporation. Dynamically programmable processing element. 4,439,839, Cl. 364-900.000.
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., to Steelcase Inc. Chain control locking assembly. 4,438,898, Cl. 248-561.000.
Knodler, Helmut: *See*—
Lang, Armin; and Knodler, Helmut, 4,438,679, Cl. 91-370.000.
Koa Oil Company, Limited: *See*—
Noguchi, Kosaku, 4,439,275, Cl. 202-100.000.
Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, to United States of America, National Aeronautics & Space Administration. Doppler radar having phase modulation of both transmitted and reflected return signals. 4,439,766, Cl. 343-9.00R.
Kobayashi, Makio: *See*—
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.
Kobayashi, Nobuo: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Kobayashi, Tsuneki: *See*—
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.
Kobayashi, Yoshinori: *See*—
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.
Kobe Steel, Ltd.: *See*—
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.
Suzuki, Tomio; and Morimoto, Kotaro, 4,439,137, Cl. 431-8.000.
Koble, Robert L., Jr., to Phoenix Manufacturing, Inc. Evaporative cooler apparatus. 4,439,375, Cl. 261-29.000.

Kockler, Barry C.: *See*—
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.
Kodama, Hisashi: *See*—
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,438,739, Cl. 123-90.550.
Kodama, Hitoshi: *See*—
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.
Kodama, Kenji: *See*—
Fukushima, Hatahiko; Handa, Tadahiko; and Kodama, Kenji, 4,439,126, Cl. 425-135.000.
Koenig, Karl-Heinz; and Schwendemann, Volker, to BASF Aktiengesellschaft. Halogenated, tertiary diisocyanates and their preparation. 4,439,369, Cl. 260-453.00P.
Koerte, Klaus, to Sandoz Ltd. Azo compounds having one or two 1,4-dioxanylmethoxycarbonyl-alkyl or -alkoxyalkyl groups. 4,439,362. Cl. 260-152.000.
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., to Eastman Kodak Company. Sensitized high aspect ratio silver halide emulsions and photographic elements. 4,439,520, Cl. 430-434.000.
Koga, Shigenobu: *See*—
Shimoyama, Yoshiaki; Tachino, Ichiro; and Koga, Shigenobu, 4,439,251, Cl. 148-31.550.
Kogo, Yasuo: *See*—
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.
Kohmoto, Shinsuke: *See*—
Okura, Zenichi; and Kohmoto, Shinsuke, 4,439,029, Cl. 354-479.000.
Kohno, Susumu: *See*—
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.
Kohri, Kitijiro: *See*—
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.
Kohring, Mark D.: *See*—
Kamman, Joseph T.; and Kohring, Mark D., 4,438,599, Cl. 51-238.00S.
Kohzai, Yoshinori; and Oyama, Shigeaki, to Fujitsu Fanuc Limited. Direct current motor. 4,439,703, Cl. 310-186.000.
Koide, Akio; and Ebata, Yoshikazu, to Janome Sewing Machine Co., Ltd. Multi-switch sewing machine. 4,438,716, Cl. 112-168.000.
Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, to Chisso Corporation. Cyano-mono-or diphenylbicyclohexane derivatives. 4,439,340, Cl. 252-299.630.
Kollmeyer, Willy D., to Shell Oil Company. Herbicidal cyano-tetrahydrofuranylmethyl ether and cyano-tetrahydropyranylmethyl ether derivatives. 4,439,225, Cl. 71-88.000.
Kollmorgen Technologies Corporation: *See*—
Kisters, Gunter, 4,438,560, Cl. 29-830.000.
Komaki, Takao: *See*—
Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, 4,439,682, Cl. 250-327.200.
Komatsu, Fumiaki: *See*—
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.
Komatsu, Hiroaki; and Yoshioka, Kenji, to Alps Electric Co., Ltd. Electronic tuning block. 4,439,749, Cl. 334-7.000.
Komatsu, Shigeru; and Nakamura, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of forming doped polycrystalline silicon pattern by selective implantation and plasma etching of undoped regions. 4,438,556, Cl. 29-576.00B.
Komori Printing Machinery Co., Ltd.: *See*—
Kawaguchi, Shoichi, 4,438,916, Cl. 271-93.000.
Kondo, Hideyo: *See*—
Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, 4,439,258, Cl. 156-86.000.
Kondo, Hirokazu: *See*—
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, 4,438,701, Cl. 104-172.00B.
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, to Kanzaki Paper Manufacturing Company, Ltd. Process for preparing triarylmethane derivatives. 4,439,610, Cl. 548-469.000.
Kondoh, Syunichi: *See*—
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.
Konigs, Heinz; Kremer, Hubert; and Pieters, Hans-Theo, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Knife construction for a double-lift open-shed Jacquard loom. 4,438,786, Cl. 139-59.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.
Koob, Hubert: *See*—
Fitterer, Horst; Koob, Hubert; and Nestler, Bert, 4,438,892, Cl. 242-199.000.
Kopic, Johachim: *See*—
Handke, Gunther; and Kopic, Johachim, 4,438,834, Cl. 188-322.160.
Korotkevich, Sergei G.: *See*—
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L. Continuous casting withdrawal apparatus. 4,438,802, Cl. 164-443.000.
Kostrov, Valery P.: *See*—
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, to Toho Beslon Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Rocker arm and process for producing the same. 4,438,738, Cl. 123-90.390.
Kotai, Ferenc: *See*—
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.
Kothe, Norbert: *See*—
Bonhard, Klaus; Eichentopf, Bertram; and Kothe, Norbert, 4,439,357, Cl. 260-112.00B.
Kovacs, Jenoe: *See*—
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
Kovalenko, Vitaly I.: *See*—
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.
Kovar, Wayne A.: *See*—
Bishop, Thomas R.; Feil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.
Kozima, Sadao; and Makino, Hisao, to Kaiyo Koggyo Co. Ltd. Water purifier. 4,439,316, Cl. 210-150.000.
Kozlik, Robert: *See*—
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Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.
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Scolastico, Carlo; Sirtori, Cesare; and Kritchevsky, David, 4,439,366, Cl. 260-397.100.
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Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.
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Voll, Manfred; Rothbuhr, Lothar; and Kuhner, Gerhard, 4,439,401, Cl. 422-150.000.

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Kaustrater, Gert, 4,438,676, Cl. 89-34.000.

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Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.

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Wiebke, Gunther, deceased, Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

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Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., 4,438,866, Cl. 220-319.000.

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Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.

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Davis, Harry H., 4,438,994, Cl. 312-330.00R.

La Cellophane: *See*—
Ceintrey, Claude, 4,439,512, Cl. 430-180.000.

La-Z-Boy Chair Company: *See*—
LaPointe, Larry P., 4,438,973, Cl. 297-349.000.

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Laforest, Pierre: *See*—
Gagnon, Pierre; and Laforest, Pierre, 4,438,903, Cl. 254-269.000.

Lai, George Y.: *See*—
Herchenroeder, Robert B.; and Lai, George Y., 4,439,248, Cl. 148-6.200.

Lamb, Charles G.; and Sanford, Robert A., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,438,776, Cl. 131-336.000.

Lambert, Frederic J.; Bosack, Donald J.; and Johansen, David K., to GNB Batteries Inc. Variable timing circuit for motive power battery chargers. 4,439,719, Cl. 320-31.000.

Lambrecht, Leonard S. Filter assembly having filter retainer apparatus. 4,439,219, Cl. 55-499.000.

Lancaster, Cleo: *See*—
Robert, Andre; and Lancaster, Cleo, 4,439,445, Cl. 424-304.000.

Lancet, Michael S., to Conoco Inc. Method of catalytic gasification with increased ash fusion temperature. 4,439,210, Cl. 48-202.000.

Landa, Benzion, to Savin Corporation. Copier cleaning system incorporating resilient noncellular sealing roller. 4,439,035, Cl. 355-15.000.

Lane, E. James, to Eaton Corporation. Speed responsive reverse control. 4,438,666, Cl. 74-868.000.

Lang, Aage, to Clean-Tex. Nap mat or carpet of washable type having increased liquid removal therefrom during washing thereof. 4,439,475, Cl. 428-92.000.

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Lang, Armin, to Zahnradfabrik Friedrichshafen, AG. Servo steering, especially for motor vehicles. 4,438,827, Cl. 180-143.000.

Lang, Donald D., to Allied Corporation. Wire pin connector for ribbon cable. 4,438,999, Cl. 339-176.0MF.

Lang, Roger J.: *See*—
Curley, James H.; and Lang, Roger J., 4,439,001, Cl. 339-176.0MP.

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Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.

Lannom, Charles S.; and Delgado, Daniel R. Lens carrier assembly for automatic lens blocking. 4,438,602, Cl. 51-277.000.

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Larkin, Mark E., to Abbott Laboratories. Apparatus for connecting medical liquid containers. 4,439,193, Cl. 604-411.000.

Larsen, Peter. Combination tool for carpentry. 4,438,538, Cl. 7-164.000.

Larson, Bradley W.: *See*—
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.

LaRussa, Joseph A., to Farrand Optical Co., Inc. Head-up infinity display and pilot's sight. 4,439,755, Cl. 340-980.000.

Latimer, John P., to Deepsea Ventures, Inc. Pipe string lift system. 4,438,902, Cl. 254-106.000.

Lauks, Imants R., to University Patents, Inc. Composition and method for forming amorphous chalcogenide films from solution. 4,439,464, Cl. 427-76.000.

Laurich, Louis: *See*—
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.

Laurijsen, Piet J. L.: *See*—
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Lauton, Alain; and Wurmli, Albert, to Ciba-Geigy Corporation. Process for retanning leather with acrylic-based oligomers. 4,439,201, Cl. 8-436.000.

LaValle, Bernard A. Bench rest device for handguns. 4,438,581, Cl. 42-94.000.

Lawrence, Alan J.; and Upp, Daniel C., to International Telephone & Telegraph Corporation. Diagnostic system for a distributed control switching network. 4,439,826, Cl. 364-200.000.

Lawson, Richard J. A. Musical expression pedal. 4,438,674, Cl. 84-1.240.

Lawter, Raymond L., to NCR Corporation. Single printing station, multiple record member feeding mechanism. 4,439,051, Cl. 400-605.000.

Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., to Bell Telephone Laboratories, Incorporated. Low dispersion single mode fiber. 4,439,007, Cl. 350-96.300.

League, Richard B.: *See*—
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.

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Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,439,381, Cl. 264-26.000.

Lees, Geoffrey C., to J. C. Ludowici & Son Ltd. Fluid seals. 4,438,935, Cl. 277-205.000.

LeFevere, Robert E., to American Standard Inc. Binder clamp spring safety device. 4,439,080, Cl. 412-9.000.

Leggett, Leo J.: *See*—
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.

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Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.

Lehment, Klaus-Friedrich: *See*—
Hugl, Herbert; Wolfrum, Gerhard; and Lehment, Klaus-Friedrich, 4,439,372, Cl. 260-465.00E.

Leighton, John D.: *See*—
Brown, William L., 4,439,650, Cl. 200-61.890.

Lemaire, Paul J.: *See*—
Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,439,007, Cl. 350-96.300.

Le Mehaute, Bernard J., to University of Miami. Asymmetric seaweeds. 4,439,058, Cl. 405-24.000.

Lengel, Kenneth W.: *See*—
Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., 4,438,866, Cl. 220-319.000.

Lenni Products, Inc.: *See*—
Weirich, Stephen; and Crothers, James L., 4,438,671, Cl. 83-212.000.

Leonard, Eugene, to VVR Associates. Subscriber television system. 4,439,785, Cl. 358-120.000.

Leppala, Matti. Drill steel guiding and centralizing mechanism. 4,438,984, Cl. 308-3.900.

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Bobichon, Jacques; and Leroy, Pierre-Loup, 4,438,784, Cl. 138-92.000.

Lessard, Philip A.; and Bartlett, Allen J., to Helix Technology Corporation. Means for periodic desorption of a cryopump. 4,438,632, Cl. 62-55.500.

Letterio, Fred, to Sweeney, Paul L., Jr. Subarachnoid bolt. 4,438,773, Cl. 128-748.000.

Leurink, Hendrik J., to Stichting Centraal Laboratorium Van De Bloedtransfusiedienst Van Het Nederlandse Rode Kruis. Container for liquids for use in medicine and surgery. 4,439,192, Cl. 604-408.000.

Levkov, Ilya I. Shielded lock assembly. 4,438,641, Cl. 70-95.000.

Levy, Alvin C.: *See*—
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.

Lew, Hyok S. Rotational mixing vessel. 4,439,045, Cl. 366-297.000.

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Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

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Lewyn, Lanny L.: *See*—
Lucas, Charles H.; and Lewyn, Lanny L., 4,439,693, Cl. 307-353.000.

Liang, Anthony; and Cheng, Hsiao L., to GTE Products Corporation. Platinum coated silver powder. 4,439,468, Cl. 427-216.000.

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Lutz, Manfred; and Reimer, Bernd, 4,439,508, Cl. 430-84.000.
Rauth, Erich; and Schmack, Hans-Jurgen, 4,439,857, Cl. 370-100.000.

Lichtenfels, William C.: *See*—
Soloviff, Paul G.; and Lichtenfels, William C., 4,438,962, Cl. 292-144.000.

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O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,576, Cl. 524-425.000.
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Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, to International Flavors & Fragrances Inc. Tricyclic alcohols, ethers and esters, process for preparing same and use thereof in augmenting or enhancing the organoleptic properites of consumable materials. 4,439,354, Cl. 252-522.00R.

Lightstone, Alexander W.: *See*—
Smyth, Lawrence C.; and Lightstone, Alexander W., 4,439,221, Cl. 65-4.210.

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Kiss, Gunter H., 4,439,477, Cl. 428-102.000.

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Dickhut, Heinrich; and Lilienthal, Alfred, 4,439,130, Cl. 425-388.000.

Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, to Philip Morris Incorporated. Method and system for laser perforation of sheet material. 4,439,663, Cl. 219-121.0LK.

Limb, John O., to Bell Telephone Laboratories, Incorporated. Collision avoiding system and protocol for a multiple access digital communications system. 4,439,763, Cl. 340-825.500.

Lincicum, Leon L.: *See*—
Perkins, Dale J.; and Lincicum, Leon L., 4,438,899, Cl. 248-642.000.

Lincoln Manufacturing Co., Inc.: *See*—
Kaminski, Daniel S., 4,438,572, Cl. 34-218.000.

Lindstrom, James A. Handle for racquetball racquet. 4,438,925, Cl. 273-75.000.

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Kreinheder, Donald E.; and Lingren, Terrance D., 4,439,747, Cl. 333-208.000.

Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, to Uhde GmbH. Process for the generation of steam. 4,438,730, Cl. 122-40.000.

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Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Lipnitskaya, Nelli I.: *See*—
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Morkovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Lippiatt, Sidney A., to Bendix Limited. Proportioning valve with pressure port communicating with stepped area of differential piston. 4,438,980, Cl. 303-6.00C.

Lippman, Jerry. Hydrophobic foam fabric coating. 4,439,473, Cl. 428-90.000.

Liscio, Mary A. Marine circulator. 4,439,060, Cl. 405-61.000.

Litchfield, Philip F., to Sci-Med Environmental Systems, Inc. Lighting and air filter structure. 4,439,816, Cl. 362-96.000.

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Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

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Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., 4,439,421, Cl. 424-85.000.

Lobb, Daniel R.: *See*—
Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., 4,439,157, Cl. 434-40.000.

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Wiig, Selmer L., 4,438,891, Cl. 242-190.000.

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Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., 4,439,200, Cl. 406-99.000.

Loctite Corporation: *See*—
Moran, James P., Jr., 4,439,600, Cl. 528-392.000.

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Eichenberger, Peter; and Lodge, John H., 4,438,663, Cl. 74-760.000.

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Loeser, Werner: *See*—
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.

Loew, Peter: *See*—
Stingelin, Willy; and Loew, Peter, 4,439,204, Cl. 8-497.000.

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Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, 4,438,547, Cl. 19-98.000.

Loftness, Marvin O. Ultrasonic and VHF locator of electrical systems defects. 4,439,723, Cl. 324-52.000.

Logan Graphic Products, Inc.: *See*—
Logan, Malcolm, 4,438,578, Cl. 40-152.000.

Logan, John G., III: *See*—
Jarrell, Donald, 4,439,317, Cl. 210-151.000.

Logan, Malcolm, to Logan Graphic Products, Inc. Picture frame and corner bracket assembly. 4,438,578, Cl. 40-152.000.

Lomas, David A.; and Thompson, Gregory J., to UOP Inc. Fluid particle backmixed cooling process. 4,439,533, Cl. 502-6.000.

Long, Gary R.; and Okunami, Hideo, to Wehr Corporation. Hydraulic refractory press including floating upper and lower plunger assemblies. 4,439,129, Cl. 425-352.000.

Long, Richard W.; and Stinton, Robert T., to Diving Unlimited International, Inc. Low friction means to facilitate putting on an underwater diving suit. 4,438,531, Cl. 2-2.10R.

Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., to Unarco Industries, Inc. Movable freight restraining device for freight cars and the like. 4,439,076, Cl. 410-153.000.

Loper, Bernd: *See*—
Renz, Dieter; and Loper, Bernd, 4,438,979, Cl. 301-37.0PB.

Lord Electric Company, Inc.: *See*—
Salaman, Roy G., 4,439,672, Cl. 235-463.000.

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Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., 4,439,570, Cl. 524-154.000.

Losada, Al. Wall anchor assembly. 4,439,079, Cl. 411-345.000.

Louik, Leonard; and Ballard, Richard E., to RCA Corporation. Apparatus for molding a recorded disc having a molded-in center hole. 4,439,128, Cl. 425-290.000.

Love, Charles J.: *See*—
Jacob, Joseph; and Love, Charles J., 4,438,541, Cl. 15-167.00R.

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Higgins, William A.; and Clark, Alan C., 4,439,594, Cl. 528-89.000.

Lucas, Charles H.; and Lewyn, Lanny L., to Hughes Aircraft Co. Sample and hold circuit with improved offset compensation. 4,439,693, Cl. 307-353.000.

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Skinner, Robert T. J.; and Tumber, Brian W., 4,438,747, Cl. 123-450.000.

Lucking, Hans J.: *See*—
Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.

Lueders, Arthur; and Bellotti, Marc, to Baxter Travenol Laboratories, Inc. Dual tubing clamp. 4,439,179, Cl. 604-34.000.

Lukin, Alexandr M.: *See*—
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.

Lummis, Michael G., to Pacific Atlantic Products, Ltd. Downrigger system mounting arrangement. 4,438,582, Cl. 43-27.400.

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Schindler, Harvey D.; and Sze, Morgan C., 4,439,313, Cl. 208-251.00H.

Lundgren, Bengt, to SKF Nova AB. Bearing housing. 4,438,991, Cl. 308-189.00R.

Lundquist, Ingemar H., to Advanced Cardiovascular Systems, Inc. Inflating and deflating device for vascular dilating catheter assembly. 4,439,185, Cl. 604-97.000.

Lundstrom, Ove V. Vibrating ditcher plow. 4,438,576, Cl. 37-98.000.

Luoma, Richard W.: *See—*
Brende, Arthur P.; and Luoma, Richard W., 4,439,699, Cl. 310-13.000.

Lutz, Horst, to Daimler-Benz Aktiengesellschaft. Leveller for motor vehicles. 4,438,645, Cl. 72-482.000.

Lutz, Manfred; and Reimer, Bernd, to Licentia Patent-Verwaltungs-GmbH. Electrophotographic recording material comprises arsenic, selenium and tellurium. 4,439,508, Cl. 430-84.000.

Lyman, Susan P.: *See—*
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.

Maag Gear-Wheel & Machine Company Limited: *See—*
Donner, Meinrad, 4,439,825, Cl. 364-167.000.

Maass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Preparation of polydiorganosiloxanes having terminal triorganosilyl groups. 4,439,592, Cl. 528-14.000.

MacBean, Donald G., to JWI Ltd. Woven pin seam in fabric and method. 4,438,789, Cl. 139-383.00A.

MacDonald, John A., to Railtech Ltd. Plug door assembly. 4,438,595, Cl. 49-219.000.

Machmerth, Herbert, to Ernst Leitz Wetzlar GmbH. Apparatus for focusing an optical system. 4,439,011, Cl. 350-255.000.

Machnev, Vyacheslav P.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Mactaggart, John W., to Sentrol Systems Ltd. Method and apparatus for measuring and controlling the color of a moving web. 4,439,038, Cl. 356-408.000.

Madden, Jean D., Jr., to Electro-Films, Inc. Apertured electronic circuit package. 4,439,754, Cl. 338-320.000.

Mader, Herbert: *See—*
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.

Maeda, Kouzo: *See—*
Kamijo, Ken; and Maeda, Kouzo, 4,438,969, Cl. 296-146.000.

Maeda, Toshiaki: *See—*
Aiga, Toshiro; and Maeda, Toshiaki, 4,438,804, Cl. 164-522.000.

Magerramova, Zemfira J. K.: *See—*
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.

Maggart, Michael J., to Eljo Products, Inc. Adjustable hinge mount. 4,438,597, Cl. 49-501.000.

Maggio, Joseph D., to Mercor Corporation. Flow control system. 4,438,731, Cl. 123-25.00N.

Magill, Thomas S.; and Keys, Deborah A. Bite-taking device. 4,439,147, Cl. 433-3.000.

Maier, Peter; and Niedermaier, Arnold, to Albert-Frankenthal AG. Cylinder for machines processing running lengths of material. 4,438,695, Cl. 101-153.000.

Maillefer S.A.: *See—*
Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, 4,438,886, Cl. 242-25.00A.

Mair, Eduard, to Siemens Aktiengesellschaft. Device for fixing recordings consisting of powdery material applied to a tape-shape recording medium with the assistance of solvent vapor. 4,439,144, Cl. 432-59.000.

Majik-Ironers, Inc.: *See—*
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 4,438,577, Cl. 38-107.000.

Makino, Hisao: *See—*
Kozima, Sadao; and Makino, Hisao, 4,439,316, Cl. 210-150.000.

Makino, Takao; and Ikeda, Toshiaki, to Kabushiki Kaisha Morita Seisakusho. Medical X-ray radiation power supply apparatus. 4,439,868, Cl. 378-112.000.

Malaviya, Sashi D., to International Business Machines Corp. Bipolar transistor read only or read-write store with low impedance sense amplifier. 4,439,842, Cl. 365-104.000.

Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., to International Business Machines Corporation. Three-gate hazard-free polarity hold latch. 4,439,690, Cl. 307-272.00R.

Malherbe, Roger F.: *See—*
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, 4,439,565, Cl. 524-103.000.

Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., to Phillips Petroleum Company. Production of single cell protein material. 4,439,523, Cl. 435-243.000.

Maltsev, Viacheslav B.: *See—*
DeYoung, Thomas W.; and Maltsev, Viacheslav B., 4,439,780, Cl. 346-140.00R.

Manganaro, James L., to FMC Corporation. Production of sodium hydrosulfide. 4,439,411, Cl. 423-560.000.

Mankarious, Samia: *See—*
Hooper, John A.; Mankarious, Samia; and Liu-Rash, Catherine R., 4,439,421, Cl. 424-85.000.

Mantey, John P.: *See—*
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.

Manville Service Corporation: *See—*
Cimochowski, Anthony E.; and Heffelmire, Brad A., 4,439,175, Cl. 493-413.000.
Graser, Earl J., 4,438,843, Cl. 206-148.000.

Marathon Oil Company: *See—*
Duke, Roy B., 4,439,345, Cl. 252-330.000.

Marchitto, Michael J.: *See—*
Ferris, Donald L.; Olster, Elliot F.; and Marchitto, Michael J., 4,439,106, Cl. 416-61.000.

Marcon Electronics Co., Ltd.: *See—*
Shimada, Hiroshi; and Sakamoto, Kiyoshi, 4,439,810, Cl. 361-272.000.

Marconi Company Limited, The: *See—*
Claydon, Gyongyver; and Iles, Gordon D., 4,439,786, Cl. 358-148.000.
Taylor, Malcolm F., 4,439,715, Cl. 318-627.000.

Mareck B.V.: *See—*
Olsson, Karl B., 4,439,134, Cl. 431-1.000.

Maresca, Louis M.: *See—*
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.

Marfurt, Hans-Rudolf; and Zurer, August, to Ciba-Geigy Corporation. Process for the separation of oil-in-water emulsions by electrolysis. 4,439,290, Cl. 204-149.000.

Marinescu, Marlene: *See—*
Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, 4,439,700, Cl. 310-13.000.

Marino, Joseph A., to Arco Industries Ltd. Blowgun toy car launcher. 4,438,587, Cl. 46-44.000.

Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., to United States of America, Navy. Anti-armor weapons trainer. 4,439,156, Cl. 434-12.000.

Martin, Daniel B., to International Business Machines Corp. Instruction substitution mechanism in an instruction handling unit of a data processing system. 4,439,828, Cl. 364-200.000.

Martin, David C.: *See—*
Doyle, Thomas E.; Hauser, Daniel; Martin, David C.; and Hayes, Michael D., 4,439,661, Cl. 219-99.000.

Martin, F. Glenn, to Atlantic Richfield Company. Wellbore fracture tracing. 4,439,677, Cl. 250-260.000.

Martin, F. Glenn, to Atlantic Richfield Company. Wellbore treatment. 4,439,678, Cl. 250-260.000.

Martin, Henry: *See—*
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,228, Cl. 71-95.000.
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,230, Cl. 71-96.000.

Martin, John E. Remote control ball. 4,438,588, Cl. 46-228.000.

Martin, Mervin G., to Hedlund Manufacturing Co., Inc. Manure loader. 4,438,885, Cl. 241-101.00B.

Martin, Peter: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Martinez, Carlos J.; and Chen, Albert C., to Mobil Oil Corporation. Water dispersible acrylic modified chlorinated rubber. 4,439,587, Cl. 525-292.000.

Martins, Agusto B.: *See—*
Amkraut, Alfred A.; and Martins, Agusto B., 4,439,199, Cl. 604-894.000.

Maruko, Saburo, to Nihon Chemical Plant Consultant Co., Ltd. Sunrays focusing apparatus. 4,439,020, Cl. 350-443.000.

Marvin Glass & Associates: *See—*
Wildman, John R.; and Breslow, Jeffrey D., 4,438,586, Cl. 46-1.00R.

Masak, Raymond J., to United States of America, Air Force. Combined adaptive sidelobe canceller and frequency filter system. 4,439,769, Cl. 343-380.000.

Maschinenfabrick Koppern GmbH & Co. KG: *See—*
Bergendahl, Hans G., 4,439,384, Cl. 264-37.000.

Maschinenfabrik Carl Zangs Aktiengesellschaft: *See—*
Konigs, Heinz; Kremer, Hubert; and Pieters, Hans-Theo, 4,438,786, Cl. 139-59.000.

Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, trustees. High efficiency broadband directional sonar transducer. 4,439,847, Cl. 367-151.000.

Massachusetts Institute of Technology: *See—*
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., 4,439,302, Cl. 204-290.00R.

Massaux, Jean G. Controlling and regulating device for pumps with constant volume. 4,439,110, Cl. 417-129.000.

Mathur, Achint P.; Tornianen, Matti J.; and Shawcross, James P., to Carrier Corporation. High performance heat transfer tube. 4,438,807, Cl. 165-133.000.

Matoba, Isao: *See—*
Iwamoto, Katsuo; Goto, Tomomichi; Kobayashi, Yoshinori; Iida, Yoshiaki; and Matoba, Isao, 4,439,252, Cl. 148-111.000.

Matsubara, Masaki: *See—*
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, 4,439,023, Cl. 351-206.000.

Matsuda, Yasuhiko: *See—*
Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, 4,439,257, Cl. 156-64.000.

Matsui, Koichi: *See*—
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.

Matsumoto, Fumio, to Showa Manufacturing Co., Ltd. Vehicle front fork. 4,438,909, Cl. 267-64.260.

Matsumoto, Hiroaki: *See*—
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.

Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, to Fuji Photo Film Co., Ltd. Noise erasing method in a radiation image recording and reproducing method. 4,439,682, Cl. 250-327.200.

Matsumura, Rumiko, administrator: *See*—
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Matsumura, Shingo, deceased: *See*—
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Matsumura, Shogo: *See*—
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.

Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, to Kao Soap Co., Ltd. Shampoo composition. 4,439,417, Cl. 424-70.000.

Matsunaga, Osamu: *See*—
Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, 4,439,787, Cl. 358-195.100.

Matsuoka, Youichi; and Tajika, Fumitaka, to Nihon Dempa Kogyo Company Limited. Quartz crystal vibrator. 4,439,706, Cl. 310-353.000.

Matsushiro, Yukimitsu, to Kabushiki Kaisha Matsushiro. Moving toy with movable battery receptacle. 4,438,589, Cl. 46-251.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,439,569, Cl. 524-128.000.
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, 4,438,759, Cl. 126-433.000.
Nishikawa, Takuji, 4,439,783, Cl. 358-22.000.

Matsuzawa, Yasue: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Mattei, Anthony, to RCA Corporation. Phase locked loop, as for MPSK signal detector. 4,439,737, Cl. 329-50.000.

Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, to Ethicon, Inc. Absorbable hemostatic composition. 4,439,420, Cl. 424-78.000.

Mattel, Inc.: *See*—
Gross, Raymond J.; and Hogg, Fredrick W., 4,439,757, Cl. 340-365.0VL.

Maurer, Gunter: *See*—
Wiebke, Gunther, deceased; Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

Mausner, Eberhard: *See*—
Kuhn, Willi; and Mausner, Eberhard, 4,439,820, Cl. 363-21.000.

Maxwell, Ralph A. Adjustable water ski fin and wing. 4,439,166, Cl. 441-79.000.

May, Adolf: *See*—
Billenstein, Siegfried; May, Adolf; and Bucking, Hans-Walter, 4,439,331, Cl. 252-8.800.

Mayclin, Thomas J. Permanent identification method for removable dental prosthesis and structure. 4,439,154, Cl. 433-229.000.

Mayer, Ferdy, to Mayer, Ferdy. Device having one or more manually controlled functions. 4,439,824, Cl. 364-150.000.

Mayer, Walter; and Wittmann, Stephan, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Overhung mounted rotatable centering spindle. 4,438,624, Cl. 57-352.000.

Mayne, David L.; and Jahsman, David, to Industrial Design & Development Corp. Electrical component dispensing tool. 4,438,867, Cl. 221-197.000.

Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., to R. J. Reynolds Tobacco Company. Apparatus and process for treating tobacco. 4,438,775, Cl. 131-300.000.

McAllister, Ronald L.: *See*—
Priepke, Edward H.; and McAllister, Ronald L., 4,439,218, Cl. 55-288.000.

McBarron, George P., to Stride Rite International, Ltd. Ventilated athletic shoe. 4,438,573, Cl. 36-3.00B.

McCarty, J. Richard: *See*—
Dieckmann, J. Robert; Burg, Richard E.; Laurich, Louis; and McCarty, J. Richard, 4,439,125, Cl. 425-140.000.

McCheyne, Robert: *See*—
Morrison, John D.; and McCheyne, Robert, 4,438,785, Cl. 138-103.000.

McConway & Torley Corporation: *See*—
Baughman, Donald L.; and Elliott, William O., 4,438,854, Cl. 213-127.000.

McCown, Frank E., Jr.: *See*—
Joo' , Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., 4,439,382, Cl. 264-29.500.

McCoy, William J., Jr. Evaporative condenser refrigeration system. 4,438,635, Cl. 62-305.000.

McCurdy, J. L.; and Jarvis, Marvin A., to Cosden Technology, Inc. Multiple stage devolatilization process for mass processable polymers. 4,439,601, Cl. 528-481.000.

McDaniel, Max P.; and Stricklen, Phil M., to Phillips Petroleum Company. Co Reduced chromyl halide on silica catalyst. 4,439,543, Cl. 502-228.000.

McDonnell Douglas Corporation: *See*—
Byrd, Norman R., 4,439,282, Cl. 204-38.00R.
Roe, George W., 4,439,155, Cl. 434-12.000.
Stacy, Robert A.; and Rice, Robert R., 4,439,014, Cl. 350-388.000.

McDougal, Thomas F. Quick set hydraulic vise structure. 4,438,911, Cl. 269-32.000.

McFadden, Edward J., to Hughes Tool Company. Shock absorbing snubber for derrick hooks. 4,438,910, Cl. 267-126.000.

McFerron, Richard G.: *See*—
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.

McGhie, Joseph A.: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.

McGourty, Lawrence E., Jr.; Audette, Gabriel; and Audette, Jean M. Interior decoration system. 4,438,604, Cl. 52-28.000.

McGowen, Wayne H. Therapeutic device for a human body. 4,438,761, Cl. 128-75.000.

McGuffey, James W., to Process Equipment Corporation. Vented inlet for tanks loaded form pressurized tankers. 4,438,861, Cl. 220-86.00R.

McIlroy, Malcolm B.; and Targett, Ralph C., to University of California, The Regents of the. Transcutaneous gas tension measurement using a dual sampling chamber and gas analysis system. 4,439,679, Cl. 250-282.000.

McKay, Dwight L.: *See*—
Bertus, Brent J.; and McKay, Dwight L., 4,439,536, Cl. 502-64.000.

McKenzie, John: *See*—
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.

McLoughlin, Arthur R., to Research Holdings Pty Limited. Method for the production of dry toner for electrostatography using interfacial polycondensation techniques. 4,439,510, Cl. 430-137.000.

McNally, Michael P. Pervious tunnel liner member. 4,439,066, Cl. 405-153.000.

McNeil, Fred A. Triphammer nutcracker. 4,438,687, Cl. 99-571.000.

McNew, George L.; and Thomas, Norman W., to Celanese Corporation. Anti-fungal performance in pelleted seeds through use of hydrophobes. 4,438,593, Cl. 47-57.600.

McVey, Harold C.: *See*—
Smith, Samuel W.; and McVey, Harold C., 4,438,714, Cl. 112-130.000.

Mead Corporation, The: *See*—
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.
Zeiler, Kenneth T., 4,439,776, Cl. 346-75.000.

Mebus, Henry R., to Harris Graphics Corporation. Separator sheet feeder. 4,439,097, Cl. 414-42.000.

Medicoteknisk Institut, Svejsecentralen: *See*—
Northeved, Allan; and Nilsson, Ole, 4,439,037, Cl. 356-402.000.

Meek, Larry F., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Anti-G suit test rig. 4,438,650, Cl. 73-432.0SD.

Mehta, Arun K.: *See*—
Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., 4,438,709, Cl. 110-347.000.

Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, to Stirling Thermal Motors, Inc. Pressure containment device. 4,439,169, Cl. 464-170.000.

Meining, Hans: *See*—
Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,438,992, Cl. 308-201.000.

Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, to Maillefer S.A. Double wire-winding machine with automatic transfer. 4,438,886, Cl. 242-25.00A.

Melvin, Maxwell V.: *See*—
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.

Mendenhall, Robert L. Recycling apparatus for particulate asphaltic concrete. 4,439,040, Cl. 366-2.000.

Mengon, Albert C., deceased: *See*—
Jaquay, Louis H.; and Mengon, Albert C., deceased, 4,439,307, Cl. 208-11.00R.

Mengon, Mary A., administratrix: *See*—
Jaquay, Louis H.; and Mengon, Albert C., deceased, 4,439,307, Cl. 208-11.00R.

Menin, Albert S., to Bendix Corporation, The. Salmon counter with separate king salmon tabulator. 4,439,844, Cl. 367-87.000.

Menn, Walter A.: *See*—
Close, Anthony D.; and Menn, Walter A., 4,439,815, Cl. 361-386.000.

Mennemann, Karl; and Geiler, Voikmar, to Schott Glaswerke. CdO-ThO_2-Free, highly refractive optical glass. 4,439,531, Cl. 501-75.000.

Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, to Vacuumschmelze GmbH. Magnetic drive system for generating linear movements. 4,439,700, Cl. 310-13.000.

Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., to Rib Loc (H.K.) Limited. Machine for forming tubes from a strip. 4,438,643, Cl. 72-49.000.

Merck & Co., Inc.: *See*—
Harwood, Richard J.; and Bondi, Joseph V., 4,439,194, Cl. 604-890.000.
Higuchi, Takeru, 4,439,196, Cl. 604-890.000.
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.
Mercor Corporation: *See*—
Maggio, Joseph D., 4,438,731, Cl. 123-25.00N.
Mergerian, Dickron: *See*—
Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, 4,439,016, Cl. 350-356.000.
Merle, Rene; Uecker, Myron; and Kozlik, Robert, to General Mills, Inc. Freeze concentration apparatus. 4,438,634, Cl. 62-123.000.
Merrell Toraude et Compagnie: *See*—
Bey, Philippe; Gerhart, Fritz; and Jung, Michel, 4,439,619, Cl. 560-169.000.
Meschaninova, Tatyana V.: *See*—
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.
Meserve, Robert F., to New England Electric Wire Corporation. Method of producing flat stranded magnetic conductor cable. 4,439,256, Cl. 156-50.000.
Messerschmitt Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
Hemmerich, Johann; Kupschus, Peter; and Frankle, Helmut, 4,439,684, Cl. 250-396.00R.
Seidel, Albert; and Wolf, Dietmar, 4,439,111, Cl. 417-379.000.
Messina, Giuseppe; Lorenzoni, Loreno; and Fadda, Antonio L., to Euteco Impianti S.p.A. Phenolic antioxidant compositions for organic polymers. 4,439,570, Cl. 524-154.000.
Mester, Heinz: *See*—
Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, 4,439,869, Cl. 378-113.000.
Meyer, John W.; Bonin, John H.; and Daniel, Arnold D., to Lockheed Missiles & Space Co., Inc. Single stage high pressure centrifugal slurry pump. 4,439,200, Cl. 406-99.000.
Mibae, Giro: *See*—
Kawamura, Hiroshi; and Mibae, Giro, 4,439,557, Cl. 523-216.000.
Michel, Helle, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Magnetoresistant transduction device for reading low density coded data. 4,439,671, Cl. 235-449.000.
Michl, Rudy; and Willi, Hanspeter, to Etablissement Dentaire Ivoclar. Photopolymerizable composition, especially for dental purposes. 4,439,380, Cl. 264-16.000.
Midland-Ross Corporation: *See*—
Wang, Robert, 4,439,212, Cl. 55-27.000.
Midrex Corporation: *See*—
Faccone, Dominic M., 4,439,233, Cl. 75-35.000.
Miho, Takuya: *See*—
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.
Miles Laboratories, Inc.: *See*—
Coan, Michael H.; and Brockway, William J., 4,439,358, Cl. 260-112.00B.
Miller, Cardel E.: *See*—
Waldo, Russell W.; and Miller, Cardel E., 4,438,544, Cl. 16-85.000.
Miller, Michael E., to RCA Corporation. Video disc stylus. 4,439,854, Cl. 369-126.000.
Miller, Stephen C., to Atlantic Richfield Company. Plasma assisted deposition system. 4,439,463, Cl. 427-39.000.
Millhone, Ralph S.: *See*—
Elson, Thomas D.; and Millhone, Ralph S., 4,438,815, Cl. 166-278.000.
Milliken Research Corporation: *See*—
Schroder, William J., 4,438,890, Cl. 242-130.000.
Mills, King L.: *See*—
Cheng, Paul J.; and Mills, King L., 4,439,400, Cl. 422-111.000.
Minalga, Philip F.: *See*—
Dunn, William H.; Edwards, William J.; and Minalga, Philip F., 4,438,715, Cl. 112-158.00B.
Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, to Rockwell International Corporation. Needle protector for sewing machines. 4,438,717, Cl. 112-227.000.
Mining Supplies Limited: *See*—
Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., 4,438,837, Cl. 198-735.000.
Minnich, George E., to Singer Company, The. Compensation apparatus for an electrohydraulic servovalve. 4,439,716, Cl. 318-632.000.
Mino, Masao; and Ohno, Takeshi, to Kabushiki Kaisha Mino Seisakusho. Grooved traverse drum for use in drum winder. 4,438,887, Cl. 242-43.200.
Minolta Camera Kabushiki Kaisha: *See*—
Hanamoto, Hiroyuki; and Horie, Yoshihiro, 4,439,143, Cl. 432-36.000.
Mints, Danny K.: *See*—
Loesch, Stanley B.; St. John, James C.; and Mints, Danny K., 4,438,729, Cl. 122-26.000.
Mirataev, Mirabdulla M. O.: *See*—
Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.
Mircheva, Vera V.: *See*—
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.
Misawa, Kazuo: *See*—
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.
Mishima, Yasuhiro: *See*—
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.
Mitsubishi Chemical Industries Ltd.: *See*—
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Baba, Sadaaki, 4,439,803, Cl. 361-63.000.
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,439,560, Cl. 523-437.000.
Mitsui Mining & Smelting Co., Ltd.: *See*—
Kuminitsu, Shiro; Hayakawa, Izumi; Kitatani, Seizo; and Emura, Akira, 4,439,237, Cl. 75-243.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.
Mitsui, Yoshiaki. Laminated core manufacturing apparatus. 4,438,558, Cl. 29-732.000.
Mitutoyo Mfg. Co., Ltd.: *See*—
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,438,566, Cl. 33-178.00R.
Miyakawa, Susumu: *See*—
Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.
Miyake, Makoto: *See*—
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Miyauchi, Tetsuya: *See*—
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.
Miyazaki, Naomi: *See*—
Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, 4,438,543, Cl. 15-250.420.
Miyoshi, Akio: *See*—
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
Miyoshi, Isao: *See*—
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.
Miyoshi, Katsuyoshi: *See*—
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.
Mizuno, Ichiro: *See*—
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,438,566, Cl. 33-178.00R.
Mizutani, Yukihisa: *See*—
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.
Mo och Domsjo Aktiebolag: *See*—
Samuelson, Hans O., 4,439,271, Cl. 162-19.000.
Moates, Roger D.: *See*—
York, Theodore H.; and Moates, Roger D., 4,439,764, Cl. 340-870.020.
Mobay Chemical Corporation: *See*—
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., 4,439,593, Cl. 528-45.000.
Mobil Oil Corporation: *See*—
Audeh, Costandi A.; and Scott, Eric J. Y., 4,439,310, Cl. 208-111.000.
Canterino, Peter J.; and Allen, Craig E., 4,439,260, Cl. 156-259.000.
Hasenauer, Randal J., 4,439,389, Cl. 264-216.000.
Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., 4,439,493, Cl. 428-414.000.
Kelly, John, Jr.; and Edelbrock, Gregory J., 4,439,069, Cl. 405-195.000.
Martinez, Carlos J.; and Chen, Albert C., 4,439,587, Cl. 525-292.000.
Tobias, Michael A., 4,439,495, Cl. 428-463.000.
Mochow, Charles M. Control package for elongated article. 4,438,845, Cl. 206-366.000.
Moffett, Daniel J. Wood burning stove having water heater. 4,438,755, Cl. 126-34.000.
Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, to Sony Corporation. AFT Circuit. 4,439,787, Cl. 358-195.100.
Mohler, Galen E., to Cooper LaserSonics. Rigid laser mirror mount and protection assembly. 4,439,862, Cl. 372-107.000.
Moity, Randolph M. Well servicing fluid additive. 4,439,328, Cl. 252-8.5LC.

Molins Limited: *See*—
Dyett, Derek H.; and Harvey, Rex, 4,438,774, Cl. 131-282.000.
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, to Henkel KGaA. Topical preparations for the treatment of seborrhea and process for inhibiting sebum production. 4,439,418, Cl. 424-70.000.
Mominee, David E.: *See*—
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,438,643, Cl. 72-49.000.
Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,438,950, Cl. 283-70.000.
Monsanto Company: *See*—
Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., 4,439,571, Cl. 524-183.000.
Ellis, Earle R., 4,439,483, Cl. 428-287.000.
Hobbs, Charles F., 4,439,626, Cl. 585-435.000.
Hobbs, Charles F., 4,439,627, Cl. 585-435.000.
Hobbs, Charles F., 4,439,628, Cl. 585-435.000.
Vogel, Stephen H., 4,439,453, Cl. 424-324.000.
Montealegre, James; and Rader, James L., to Container Corporation of America. Cushioning carton. 4,438,848, Cl. 206-588.000.
Montedison S.p.A.: *See*—
Cecchin, Giuliano; and Albizzati, Enrico, 4,439,540, Cl. 502-125.000.
Cometti, Giuseppe; and Chiusoli, Gian P., 4,439,618, Cl. 560-56.000.
Monterey Laboratories, Inc.: *See*—
Numbers, Jody L., 4,438,853, Cl. 211-77.000.
Moon, Seaton: *See*—
Treichel, Richard; and Moon, Seaton, 4,438,818, Cl. 172-9.000.
Moran, James P., Jr., to Loctite Corporation. Cure to elastomers compositions. 4,439,600, Cl. 528-392.000.
Moreland, N. Flynt: *See*—
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.
Moretto, Hans-Heinrich: *See*—
Mass, Gunther; Lucking, Hans J.; Brandle, Karl; and Moretto, Hans-Heinrich, 4,439,592, Cl. 528-14.000.
Morgan, Dean T., to Thermo Electron Corporation. Heat-actuated air conditioner/heat pump. 4,438,636, Cl. 62-325.000.
Mori, Sanae, to Daido Metal Company Ltd. Multi-layer bearing with coating of tetrafluoroethylene-perfluoroalkylvinyl either copolymer resin and polytetrafluoroethylene resin. 4,439,484, Cl. 428-318.400.
Moriarty, Maurice J. Piston ring. 4,438,937, Cl. 277-215.000.
Morimoto, Kotaro: *See*—
Suzuki, Tomio; and Morimoto, Kotaro, 4,439,137, Cl. 431-8.000.
Morioka, Yoshihiro: *See*—
Nakamura, Takashi; and Morioka, Yoshihiro, 4,439,713, Cl. 315-370.000.
Nakamura, Takashi; and Morioka, Yoshihiro, 4,439,714, Cl. 315-371.000.
Morita, Kouji: *See*—
Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, 4,439,787, Cl. 358-195.100.
Morita, Tatsuo: *See*—
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.
Morong, William H., III, to Analog Devices, Incorporated. Apparatus for determining the number of turns of a magnetic coil. 4,439,724, Cl. 324-55.000.
Morris, Bruce E.: *See*—
Reneau, Bobby J.; and Morris, Bruce E., 4,438,901, Cl. 254-29.00A.
Morrison, Ian D.: *See*—
Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., 4,439,507, Cl. 430-058.000.
Morrison, John D.; and McCheyne, Robert. Pipe enclosure. 4,438,785, Cl. 138-103.000.
Morrison, Rocky V., to Discovision Associates. Hot sprue assembly for an injection molding machine. 4,439,132, Cl. 425-548.000.
Moser, Helmut; and Robinson, Tibor, to Sandoz Ltd. Method for improving the fastness of dyeings with basic dyes on cellulosic substrates. 4,439,208, Cl. 8-556.000.
Moskovsky, Vladislav G.: *See*—
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
Mostek Corporation: *See*—
Terry, Michael B., 4,439,637, Cl. 179-16.00F.
Motomiya, Tetsuo, to Kabushiki Kaisha Endo Seisakusho. Golf club head. 4,438,931, Cl. 273-167.00H.
Motorola, Inc.: *See*—
Bresin, Mark S.; and Gilmore, Peter B., 4,439,654, Cl. 200-302.100.
Budnik, Brian J., 4,439,722, Cl. 323-248.000.
Hoppe, David R., 4,439,046, Cl. 368-120.000.
Stevenson, David W., 4,439,006, Cl. 350-96.200.
Turner, Harvey N., Jr., 4,439,741, Cl. 330-149.000.
Motta, Bruno: *See*—
Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, 4,438,717, Cl. 112-227.000.
MRJ, Inc.: *See*—
Bradford, James N., 4,439,861, Cl. 372-25.000.
Muckelroy, Naomi, executrix: *See*—
Dowden, William, deceased; and Muckelroy, Naomi, executrix, 4,438,835, Cl. 192-3.00M.
Mueller, Richard W., to Rogers Corporation. Method of reworking printed circuit boards. 4,438,561, Cl. 29-831.000.
Mueller-Schloer, Christian, to Siemens Corporation. Apparatus and method for cryptographic identity verification. 4,438,824, Cl. 178-22.080.
Mullay, John J., to Atlas Powder Company. Solid sensitizers in water gel explosives and method. 4,439,254, Cl. 149-2.000.
Muller, Hans, to Dr. Muller AG. Backwash multiple alluvial filter and method of filtering therewith. 4,439,327, Cl. 210-772.000.
Muller, Kurt: *See*—
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, 4,438,783, Cl. 138-89.000.
Mulzet, Alfred P., to International Business Machines Corporation. Sealless centrifuge processing channel and tube system. 4,439,178, Cl. 494-85.000.
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased (by Matsumura, Rumiko, administrator), to Mitsubishi Chemical Industries Ltd.; and Nippon Shinyaku Co., Ltd. Glutamine derivatives. 4,439,448, Cl. 424-309.000.
Munter, Ernst A., to Northern Telecom Limited. Digital circuit and method for the detection of call progress tones in telephone systems. 4,439,639, Cl. 179-84.0VF.
Mura, Richard J., to Outboard Marine Corporation. Magneto alternator regulator with tachometer output. 4,439,721, Cl. 322-31.000.
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, to Toho Titanium Co., Ltd. Process for the preparation of catalyst component for the polymerization of olefins. 4,439,537, Cl. 502-105.000.
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, to Tsubakimoto Chain Company. Truck conveyor. 4,438,701, Cl. 104-172.00B.
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Metal vapor discharge lamp. 4,439,711, Cl. 313-487.000.
Murata Manufacturing Co., Ltd.: *See*—
Takaya, Tadashi, 4,439,640, Cl. 179-110.00A.
Murray, Richard C.: *See*—
Gibbard, Henry F.; Murray, Richard C.; and Cech, Jay M., 4,439,500, Cl. 429-27.000.
Muryoi, Takeshi, to Nippon Kogaku K.K. Zoom lens barrel with single-ring continuous focusing. 4,439,019, Cl. 350-430.000.
Muryoi, Takeshi, to Nippon Kogaku K.K. Diaphragm driving device for a lens barrel. 4,439,031, Cl. 354-274.000.
Muskulus, Willi: *See*—
Fichtner, Karl-Heinz; Kramer, Willi; and Muskulus, Willi, 4,439,100, Cl. 414-115.000.
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cephalosporin derivative and pharmaceutical composition containing the derivative. 4,439,434, Cl. 424-246.000.
Mutschler, Ulrich. Device for selecting the hooks of a weaving mechanism by successively feeling the two halves of a card of the Jacquard type. 4,438,787, Cl. 139-329.000.
Myers, Kenneth J. Wick bar lift. 4,438,592, Cl. 47-1.500.
Myers, Ronald W., to AMP Incorporated. Modular plug-dial modular jack adaptor. 4,438,998, Cl. 339-154.00A.
N.K.F. Groep B.V.: *See*—
Grooten, Albertus T. M., 4,439,633, Cl. 174-106.00R.
Nabeshima, Daiki, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotational speed controlling apparatus for recording disc. 4,439,849, Cl. 369-50.000.
Nagubandi, Sreeramulu, to Stauffer Chemical Company. Process for preparing phosphonomethylated amino acids. 4,439,373, Cl. 260-502.50F.
Nagy, Gabor: *See*—
Sciola, Joseph; and Nagy, Gabor, 4,438,554, Cl. 29-57.000.
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, to Beton- es Vasbetonipari Muvek. Apparatus for producing concrete elements of high dimensional accuracy. 4,439,131, Cl. 425-436.00R.
Naito, Hideki: *See*—
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, 4,439,513, Cl. 430-203.000.
Naito, Sachio: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.
Nakagawa, Masahiro: *See*—
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.
Nakagawa, Mitsuo, to Honda Giken Kogyo Kabushiki Kaisha. Air cleaner device in motorcycles. 4,438,828, Cl. 180-219.000.
Nakahara, Masao: *See*—
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, 4,438,566, Cl. 33-178.00R.
Nakahashi, Ken-ichi: *See*—
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, 4,439,023, Cl. 351-206.000.
Nakajima, Isao: *See*—
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, 4,438,692, Cl. 101-93.040.
Nakamura, Hitoshi: *See*—
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.

Nakamura, Michio: *See—*
Komatsu, Shigeru; and Nakamura, Michio, 4,438,556, Cl. 29-576.00B.
Nakamura, Shiro: *See—*
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Nakamura, Takashi; and Morioka, Yoshihiro, to Sony Corporation. Deflection control circuit for image pick-up tube. 4,439,713, Cl. 315-370.000.
Nakamura, Takashi; and Morioka, Yoshihiro, to Sony Corporation. Deflection control circuit. 4,439,714, Cl. 315-371.000.
Nakanishi, Kiyoshi: *See—*
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,438,741, Cl. 123-188.00M.
Nakao, Sho: *See—*
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.
Nakashima, Naoki: *See—*
Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, 4,439,599, Cl. 528-80.000.
Nakayama, Kazuaki, to Pioneer Electronic Corporation. Amplifier circuit. 4,439,745, Cl. 330-296.000.
Nakura, Toshiyuki: *See—*
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.
Naldi, Lawrence J.: *See—*
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.
Namba, Yuzuru; and Aoyagi, Kenichi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,438,742, Cl. 123-308.000.
Namba, Yuzuru; and Aoyagi, Kenichi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,438,743, Cl. 123-308.000.
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., to Shell Oil Company. Method for sensing and remotely controlling a tool to workpiece spatial relationship. 4,438,754, Cl. 125-14.000.
Nartowski, Andre, to Regie Nationale des Usines Renault. Carburetor for an internal combustion motor. 4,439,377, Cl. 261-52.000.
Nater, Charles, to Fuji Photo Film Co., Ltd. Thin film head array. 4,439,793, Cl. 360-121.000.
National ICEE Corporation: *See—*
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., 4,438,682, Cl. 99-323.700.
Nauchno Proizvodstvennoe Obiedienenie Po Toplivnoi Apparature Dvigatelei: *See—*
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.
Naumenko, Nikolai N.: *See—*
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.
NCR Corporation: *See—*
Aiena, Peter P.; and Schulz, Eduard, 4,439,837, Cl. 364-900.000.
Hutcheon, Alfred J., 4,438,704, Cl. 109-44.000.
Lawter, Raymond L., 4,439,051, Cl. 400-605.000.
Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek: *See—*
Schwippert, Guusstaaf A., 4,438,749, Cl. 123-494.000.
Negele, Richard; and Birkenmaier, Wilhelm, to SKF Kugellagerfabriken GmbH. Ball bearing. 4,438,989, Cl. 308-184.00R.
Negle, Hans: *See—*
Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, 4,439,869, Cl. 378-113.000.
Neilson, William J.: *See—*
Garner, Claude R.; and Neilson, William J., 4,438,934, Cl. 277-92.000.
Nelson, Delmer R., to A. O. Smith Harvestore Products, Inc. Method and apparatus for leveling a storage structure. 4,438,607, Cl. 52-126.100.
Nelson, Hugh W.: *See—*
Borio, Richard W.; Nelson, Hugh W.; and Mehta, Arun K., 4,438,709, Cl. 110-347.000.
Nelson, Lorne W.; and Torborg, Ralph H., to Honeywell Inc. Furnace stack damper control apparatus. 4,439,139, Cl. 431-20.000.
Nelson, Priscilla E. Exfoliator disc. 4,438,767, Cl. 128-304.000.
Neomed Inc.: *See—*
Ecanow, Charles S.; and Ecanow, Bernard, 4,439,424, Cl. 424-153.000.
Nesseth, Clifford B.: *See—*
Nesseth, Clinton A.; and Nesseth, Clifford B., 4,439,115, Cl. 417-460.000.
Nesseth, Clinton A.; and Nesseth, Clifford B., to Butler Manufacturing Company. Manure transfer system having a pull pump. 4,439,115, Cl. 417-460.000.
Nestler, Bert: *See—*
Fitterer, Horst; Koob, Hubert; and Nestler, Bert, 4,438,892, Cl. 242-199.000.
Neuhauser, Werner: *See—*
Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, 4,439,013, Cl. 350-307.000.
Neveri, Istvan: *See—*
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.
New England Electric Wire Corporation: *See—*
Meserve, Robert F., 4,439,256, Cl. 156-50.000.
Newkirk, Larry: *See—*
Newkirk, Martha; and Newkirk, Larry, 4,439,636, Cl. 179-7.10R.
Newkirk, Martha; and Newkirk, Larry. Credit card actuated telecommunication access network. 4,439,636, Cl. 179-7.10R.
Nguyen, Xuan T. Pulp mill residual liquor recovery process. 4,439,272, Cl. 162-30.110.
Nicoloso, Dante: *See—*
Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, 4,439,651, Cl. 200-144.0AP.
Niedermaier, Arnold: *See—*
Maier, Peter; and Niedermaier, Arnold, 4,438,695, Cl. 101-153.000.
Nielson, Erik I.; and Hope, Robert B., to Schlegel Corporation. Urethane bonded windshield dam. 4,438,609, Cl. 52-208.000.
Niemann, Heinz, to ESGE-Marby GmbH & Co., KG. Bicycle luggage carrier and reflector structure combination. 4,439,009, Cl. 350-99.000.
Nifco Inc.: *See—*
Omata, Nobuaki, 4,438,552, Cl. 24-297.000.
Nihon Chemical Plant Consultant Co., Ltd.: *See—*
Maruko, Saburo, 4,439,020, Cl. 350-443.000.
Nihon Dempa Kogyo Company Limited: *See—*
Matsuoka, Youichi; and Tajika, Fumitaka, 4,439,706, Cl. 310-353.000.
Nihon Medi-Physics Company, Ltd.: *See—*
Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, 4,439,413, Cl. 424-1.100.
Nihon Seikan Kabushiki Kaisha: *See—*
Kawamata, Kiyoshi, 4,438,721, Cl. 118-249.000.
Niimura, Kouichi: *See—*
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.
Nike, Inc.: *See—*
Johnson, Jeffrey O., 4,438,574, Cl. 36-45.000.
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., to Proizvodstvennoe Geologicheskoe Obiedinenie "Tsentrogeologia". Device for applying plugging mix to well walls. 4,438,813, Cl. 166-177.000.
Nilsson, Ole: *See—*
Northeved, Allan; and Nilsson, Ole, 4,439,037, Cl. 356-402.000.
Nimerick, Kenneth H.; and Copeland, Claude T., to Dow Chemical Company, The. Composition and method for preventing freezing together of various surfaces. 4,439,337, Cl. 252-70.000.
Nimura, Youichi: *See—*
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.
Nintendo Co., Ltd.: *See—*
Yokoi, Gunpei; and Okada, Satoru, 4,438,926, Cl. 273-85.00G.
Nippon Electric Co., Ltd.: *See—*
Akamatsu, Yoshiyuki; and Shimogawara, Jun, 4,438,915, Cl. 271-9.000.
Takamatsu, Ryoichi, 4,439,843, Cl. 365-218.000.
Nippon Kogaku K.K.: *See—*
Muryoi, Takeshi, 4,439,019, Cl. 350-430.000.
Muryoi, Takeshi, 4,439,031, Cl. 354-274.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.
Nippon Oil and Fats Co., Ltd.: *See—*
Doi, Hiroshi; Kadota, Osamu; and Kohno, Susumu, 4,439,555, Cl. 523-122.000.
Nippon Shinyaku Co., Ltd.: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.
Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.
Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, 4,438,543, Cl. 15-250.420.
Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,438,647, Cl. 73-117.300.
Nippon Steel Corporation: *See—*
Shimoyama, Yoshiaki; Tachino, Ichiro; and Koga, Shigenobu, 4,439,251, Cl. 148-31.550.
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.
Nippon Suisan Kabushiki Kaisha: *See—*
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, 4,439,456, Cl. 426-276.000.
Nippon Telecommunication Engineering Company Limited: *See—*
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.
Nippondenso Co., Ltd.: *See—*
Imai, Takeshi; and Kako, Naohiro, 4,439,255, Cl. 156-49.000.

Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, 4,439,321, Cl. 210-493.100.

Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, to Sanofi. Amidobenzamides, their salts and pharmaceutical compositions containing them. 4,439,444, Cl. 424-285.000.

Nishida, Minoru: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.

Nishigaki, Yuji: *See*—
Ishihara, Shunichi; Kitajima, Nobuo; Nishigaki, Yuji; and Kitahara, Nobuko, 4,439,504, Cl. 430-42.000.

Nishikawa, Takuji, to Matsushita Electric Industrial Co., Ltd. Image synthesizing apparatus. 4,439,783, Cl. 358-22.000.

Nishimaki, Tsunetoshi: *See*—
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.

Nishimura, Koji, to Vital Kogyo Kabushiki Kaisha. Device for mounting and dismounting chain blocks. 4,438,905, Cl. 254-389.000.

Nishimura, Yuji: *See*—
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.

Nissan Motor Co., Ltd.: *See*—
Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, 4,438,736, Cl. 123-90.160.
Hayashi, Yoshimasa, 4,438,734, Cl. 123-90.270.
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.
Kamijo, Ken; and Maeda, Kouzo, 4,438,969, Cl. 296-146.000.
Katayama, Yoshinori; Fujiwara, Ryoji; and Nishimaki, Tsunetoshi, 4,438,972, Cl. 296-223.000.
Yamaguchi, Hiroshi; and Ikeura, Kenji, 4,439,833, Cl. 364-431.090.

Nissan Motor Corp.: *See*—
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.

Nitzberg, Leonard R., to Patent Development Ltd. Method for remote positioning of explosive charges in mining voids. 4,438,699, Cl. 102-313.000.

NL Industries, Inc.: *See*—
House, Roy F.; and Hoover, Lonnie D., 4,439,333, Cl. 252-8.55R.
Schaeper, Gary R.; and Olson, Richard A., 4,438,900, Cl. 251-1.00B.

Nobis, Dieter, to Deere & Company. Shift device for the drive of a utility vehicle. 4,438,657, Cl. 74-477.000.

Noffke, Roy O.; and Engel, Thomas G., to Appleton Papers, Inc. Slitter mounting bracket. 4,438,673, Cl. 83-502.000.

Nogi, Tatsuo: *See*—
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Noguchi, Hiroki; Fukami, Akira; and Miyazaki, Naomi, to Nippon Soken, Inc. Windshield wiper device. 4,438,543, Cl. 15-250.420.

Noguchi, Kosaku, to Koa Oil Company, Limited. Coke calcining apparatus. 4,439,27[illegible], Cl. 202-100.000.

Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Motor power control circuit for A.C. induction motors. 4,439,718, Cl. 318-729.000.

Nomura, Yoshihisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Slide pin device in a floating caliper type disc brake. 4,438,832, Cl. 188-73.450.

Noonan, Daniel T.: *See*—
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.

Norioka, Setsuo; and Date, Naoki, to Jeol Ltd. Charged particle beam scanning device. 4,439,681, Cl. 250-310.000.

Northern Telecom Limited: *See*—
Munter, Ernst A., 4,439,639, Cl. 179-84.0VF.

Northeved, Allan; and Nilsson, Ole, to Medicoteknisk Institut, Svejecentralen. Process for optically determining the meat-to-lard-ratio in for instance slaughtered animals. 4,439,037, Cl. 356-402.000.

Norwich Eaton Pharmaceuticals, Inc.: *See*—
Gray, Joseph E., 4,439,429, Cl. 424-285.000.
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,439,608, Cl. 546-283.000.

Novikov, Evgeny V.: *See*—
Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., 4,438,750, Cl. 123-557.000.

Novo Industri A/S: *See*—
Villettaz, Jean-Claude, 4,439,435, Cl. 426-12.000.

Noyori, Tatsuhiko: *See*—
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.

NSK-Warner K.K.: *See*—
Imai, Hironobu, 4,438,551, Cl. 24-68.0SB.

Numbers, Jody L., to Monterey Laboratories, Inc. Rotating storage rack for baby food containers. 4,438,853, Cl. 211-77.000.

N.V. Nederlandsche Apparatenfabriek Nedap: *See*—
De Jong, Hendrik J., 4,438,642, Cl. 70-232.000.

O'Blasny, Richard H., to Delta Central Refining, Inc. Rerefining used lubricating oil with hydride reducing agents. 4,439,311, Cl. 208-179.000.

O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., to Spraying Systems Company. Quick disconnect nozzle. 4,438,884, Cl. 239-600.000.

Occidental Chemical Corporation: *See*—
Swarup, Rajeshwar, 4,439,296, Cl. 204-253.000.

Occidental Research Corporation: *See*—
Baughman, David R.; and Bergeson, Jerry R., 4,438,976, Cl. 299-4.000.

O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., to Olin Corporation. Modified polyurethane liquid polymer compositions. 4,439,576, Cl. 524-425.000.

O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., to Olin Corporation. Modified polyurethane liquid polymer compositions. 4,439,577, Cl. 524-425.000.

Oda, Kiyoshi, to Yoshida Kogyo K. K. Lockable slider for slide fasteners. 4,438,550, Cl. 70-57.000.

Odessky Politekhnichesky Institut: *See*—
Belikov, Viktor T.; Ivlev, Anatoly D.; and Chelak, Viktor G., 4,439,702, Cl. 310-80.000.

Oe, Kunio: *See*—
Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, 4,438,559, Cl. 29-740.000.

Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, to Aktiengesellschaft Adolph Saurer AG. Weft thread-selection apparatus for a weaving machine. 4,438,791, Cl. 139-453.000.

Ofuji, Hiromichi: *See*—
Hara, Seinosuke; Ofuji, Hiromichi; and Gotou, Takaharu, 4,438,736, Cl. 123-90.160.

Ogasawara, Hiroomi. Microdisplacement detector. 4,439,725, Cl. 324-61.00R.

Ogata, Minoru: *See*—
Ito, Yoshio; Ikeda, Takeshi; Matsumoto, Hiroaki; and Ogata, Minoru, 4,438,918, Cl. 271-251.000.

Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, to Westinghouse Electric Corp. Optical beam deflection system. 4,439,016, Cl. 350-356.000.

Ohie, Tomonori, to Diesel Kiki Co., Ltd. Fuel injection pump. 4,439,116, Cl. 417-499.000.

Ohki, Nobutaka; Kawata, Ken; and Itoh, Isamu, to Fuji Photo Film Co., Ltd. Silver-halide photographic light-sensitive material. 4,439,519, Cl. 430-405.000.

Ohmori, Taiji: *See*—
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, 4,439,832, Cl. 364-426.000.

Ohno, Takeshi: *See*—
Mino, Masao; and Ohno, Takeshi, 4,438,887, Cl. 242-43.200.

Ohta, Masafumi; and Sasaki, Masaomi, to Ricoh Co., Ltd. Multilayer electrophotographic element containing a trisazo charge carrier generating substance and an anthracene or divinyl benzene charge carrier transfer substance. 4,439,506, Cl. 430-58.000.

Ohta, Minoru: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.

Ohta, Mutsuru: *See*—
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.

Ohta, Yoshikatsu: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.

Ohta, Yoshitsugu: *See*—
Furukawa, Hajime; and Ohta, Yoshitsugu, 4,439,784, Cl. 358-86.000.

Okabe, Yoshio: *See*—
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,438,739, Cl. 123-90.550.

Okada, Satoru: *See*—
Yokoi, Gunpei; and Okada, Satoru, 4,438,926, Cl. 273-85.00G.

Okajima, Hidekazu; and Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Zoom lens structure. 4,439,018, Cl. 350-430.000.

Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, to Mitsubishi Denki Kabushiki Kaisha. Rotor of a superconductive rotary electric machine. 4,439,701, Cl. 310-45.000.

Okamoto, Yukio: *See*—
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.

Okamura, Masatoshi; and Shibaj, Haruo, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,438,860, Cl. 220-4.00B.

Okumura, Takeo: *See*—
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.

Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for controlling a flow in a helical type intake port. 4,438,741, Cl. 123-188.00M.

Okunami, Hideo: *See*—
Long, Gary R.; and Okunami, Hideo, 4,439,129, Cl. 425-352.000.

Okura, Zenichi; and Kohmoto, Shinsuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera with information transmitting elements. 4,439,029, Cl. 354-479.000.

Olin Corporation: *See*—
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.

O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,576, Cl. 524-425.000.
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,577, Cl. 524-425.000.
Olschewski, Armin; Kispert, Klaus; and Meining, Hans, to SKF Kugellagerfabriken GmbH. Two-piece rolling bearing cage. 4,438,992, Cl. 308-201.000.
Olson, Alvin O. Sandpaper cleaning device. 4,438,601, Cl. 51-262.00A.
Olson, Daniel R., to General Electric Company. Silyl-polyacrylates for polycarbonate substrates. 4,439,494, Cl. 428-412.000.
Olson, Richard A.: *See—*
Schaeper, Gary R.; and Olson, Richard A., 4,438,900, Cl. 251-1.00B.
Olsson, Karl B., to Mareck B.V. Combustion chamber for pulsating combustion. 4,439,134, Cl. 431-1.000.
Olster, Elliot F.: *See—*
Ferris, Donald L.; Olster, Elliot F.; and Marchitto, Michael J., 4,439,106, Cl. 416-61.000.
Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., to Union Carbide Corporation. Dual column high pressure nitrogen process. 4,439,220, Cl. 62-31.000.
Olympia Werke AG: *See—*
Klingenberg, Wolfgang, 4,439,838, Cl. 364-900.000.
Olympus Optical Co., Ltd.: *See—*
Honda, Mikio; Matsui, Koichi; Kohri, Kitijiro; Misawa, Kazuo; and Kambara, Koji, 4,439,197, Cl. 604-891.000.
Iba, Youich; Nakahashi, Ken-ichi; and Matsubara, Masaki, 4,439,023, Cl. 351-206.000.
Ueda, Yasuhiro, 4,439,030, Cl. 354-62.000.
Omata, Nobuaki, to Nifco Inc. Plastic fastener. 4,438,552, Cl. 24-297.000.
OMI International Corporation: *See—*
Tomaszewski, Thaddeus W., 4,439,285, Cl. 204-51.000.
Verberne, Wim J. C.; and Hadley, John S., 4,439,283, Cl. 204-38.00R.
Ono, Minoru: *See—*
Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, 4,439,496, Cl. 428-513.000.
Ono, Takeo: *See—*
Asaoka, Sachio; Ono, Takeo; and Shiroto, Yoshimi, 4,439,312, Cl. 208-216.0PP.
Ontario Cancer Institute: *See—*
Archer, Michael C.; and Jain, Kanti, 4,439,521, Cl. 435-1.000.
Ooms, Julius, to Procter & Gamble Company, The. Textile treatment compositions. 4,439,330, Cl. 252-8.800.
Operti, Claudio: *See—*
Schalk, Bartje; Operti, Claudio; and Bras, Johan C., 4,438,990, Cl. 308-187.100.
Optische Werke G. Rodenstock: *See—*
Wilms, Karl-Heinz, 4,439,026, Cl. 351-219.000.
Orain, Michel, to Spicer, Glaenzer. Coupling between two rotary shafts. 4,439,168, Cl. 464-69.000.
Orav, Tonu: *See—*
Hintsa, Roy A.; and Orav, Tonu, 4,438,613, Cl. 52-484.000.
Orenco Systems, Inc.: *See—*
Ball, Harold L., 4,439,323, Cl. 210-608.000.
Orikasa, Shoji: *See—*
Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.
Orlowski, Gerald J.; and Adamson, Robert S., to Armour Food Company. Apparatus for separating nested cup-shaped containers. 4,439,101, Cl. 414-126.000.
Orr, John R.: *See—*
Riddle, Michael H.; and Orr, John R., 4,439,804, Cl. 361-92.000.
Orthodyne Electronics Corporation: *See—*
Smith, Michael C.; and Smith, Hal W., Jr., 4,438,880, Cl. 228-1.00A.
Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, to Hitachi, Ltd. Electromagnetic focusing cathode-ray tube. 4,439,710, Cl. 313-414.000.
Osborne, Trevor R., to Scott Bader Company Limited. Moulding compositions. 4,439,559, Cl. 523-513.000.
Oshima, Hirofumi: *See—*
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.
Ost, Christian: *See—*
Herrmann, Fritz; and Ost, Christian, 4,439,279, Cl. 204-1.500.
Osthoff, Herbert. Cover grating for manure removal canals in stables. 4,438,726, Cl. 119-28.000.
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., to ICI Australia Limited; and State of South Australia. Method of growing molluscs. 4,438,725, Cl. 119-4.000.
Oswald, Peter, to Rieter Machine Works Ltd. Gripper apparatus on a ring spinning or ring twisting machine. 4,438,623, Cl. 57-275.000.
Otid Engineering Corporation: *See—*
Patel, Dhirajlal C., 4,438,811, Cl. 166-123.000.
Otsu, Jun: *See—*
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.
Ott, John B.: *See—*
Dufour, Daniel L.; Harris, Alva F.; and Ott, John B., 4,439,571, Cl. 524-183.000.
Outboard Marine Corporation: *See—*
Burmeister, Dennis N.; Busse, Thomas A.; and Jones, Wesley C., 4,439,163, Cl. 440-86.000.
Mura, Richard J., 4,439,721, Cl. 322-31.000.
Outinord St. Amand S.A.: *See—*
van der Gaarden, Cornelis, 4,439,064, Cl. 405-150.000.
Ovard, John C. Cooling tower splash bar method and apparatus. 4,439,378, Cl. 261-111.000.
Ovodenko, Maxim B.: *See—*
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.
Owen, David A. A.: *See—*
Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., 4,439,435, Cl. 424-251.000.
Owen, Douglas B., to D. W. Zimmerman Mfg., Inc. Liquid pump with flexible bladder member. 4,439,113, Cl. 417-394.000.
Owens-Illinois, Inc.: *See—*
Appleyard, John A., 4,439,394, Cl. 264-535.000.
Chang, Long F., 4,438,856, Cl. 215-12.00R.
Oyama, Shigeaki: *See—*
Kohzai, Yoshinori; and Oyama, Shigeaki, 4,439,703, Cl. 310-186.000.
Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, to Nippon Soken, Inc. Ignition range detector for internal combustion engines. 4,438,647, Cl. 73-117.300.
P.I.V. Antrieb Werner Reimers, GmbH & Co. KG: *See—*
Steuer, Herbert K., 4,439,170, Cl. 474-28.000.
Paccar Inc.: *See—*
Boucher, Graeme B., 4,438,970, Cl. 296-190.000.
Stephens, Donald L., 4,438,825, Cl. 180-89.120.
Pace Incorporated: *See—*
Sylvia, Frank, 4,439,667, Cl. 219-230.000.
Pacific Atlantic Products, Ltd.: *See—*
Lummis, Michael G., 4,438,582, Cl. 43-27.400.
Pack Image, Inc.: *See—*
Stone, Orison W., 4,438,849, Cl. 206-592.000.
Padias, Anne B.: *See—*
Hall, Henry K., Jr.; and Padias, Anne B., 4,439,597, Cl. 528-272.000.
Paglia, Richard, to Polaroid Corporation. Ultrasonic transducer for use in a vibratory environment. 4,439,641, Cl. 179-111.00R.
Pahade, Ravindra F.: *See—*
Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., 4,439,220, Cl. 62-31.000.
Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, to Boehringer Mannheim GmbH. Composition and method for the detection of hydrogen peroxide. 4,439,527, Cl. 436-135.000.
Paladino, Anthony, to Timberland Equipment Limited. Seedling planter. 4,438,710, Cl. 111-3.000.
Palmer, John L.: *See—*
Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., 4,439,181, Cl. 604-56.000.
Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., to Xerox Corporation. Layered photoresponsive imaging device with photogenerating pigments dispersed in a polyhydroxy ether composition. 4,439,507, Cl. 430-058.000.
Pantaleon-Stemberg, Gerd: *See—*
Eckstein, William; and Pantaleon-Stemberg, Gerd, 4,438,966, Cl. 292-259.00R.
Papis, Thaddeus. Tapered plate annular heat exchanger. 4,438,809, Cl. 165-166.000.
Papp, Laszlo: *See—*
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.
Papst-Motoren GmbH & Co. KG: *See—*
Schuh, Bernhard, 4,438,542, Cl. 360-97.000.
Paredes, Candelario. Seat and cover assembly for a toilet bowl. 4,438,535, Cl. 4-234.000.
Parello, Joseph: *See—*
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., to Woodland International Corporation. Method of using an areal array of tubular electron sources. 4,438,557, Cl. 29-576.00B.
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Parks, Kenneth L., to Agrico Chemical Company. Method for improving filterability of gypsum and wet process phosphoric acid. 4,439,407, Cl. 423-317.000.
Parlman, Robert M.; and Bresson, Clarence R., to Phillips Petroleum Company. Flotation reagents. 4,439,314, Cl. 209-166.000.
Pask, George; and Golton, Howard J., to Rolls-Royce Limited. Annular seal for a gas turbine engine. 4,438,939, Cl. 277-236.000.
Patel, Dhirajlal C., to Otid Engineering Corporation. Latch for use in a well. 4,438,811, Cl. 166-123.000.
Patel, Gordhanbhai N.; and Ivory, Dawn M., to Allied Corporation. Polydiacetylene gels. 4,439,346, Cl. 252-408.100.
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Nitzberg, Leonard R., 4,438,699, Cl. 102-313.000.
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Lacoste, Francois R.; and Biard, Francoise M. H., 4,439,471, Cl. 428-35.000.
Paul Kiefel GmbH: *See—*
Schaeffer, Gerard; and Hoffarth, Dieter, 4,439,041, Cl. 366-144.000.
Paulsen, Gary A.: *See—*
O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., 4,438,884, Cl. 239-600.000.

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PCUK Produits Chimiques Ugine Kuhlmann: *See*—
Foulletier, Louis, 4,439,534, Cl. 502-8.000.

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Schutzler, Jerome C.; and Jechel, Kurt E., 4,439,392, Cl. 264-511.000.

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Lazay, Paul D.; Lemaire, Paul J.; and Pearson, Arthur D., 4,439,007, Cl. 350-96.300.

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Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., 4,438,698, Cl. 101-287.000.

Pest, Raymond F. Treatment of progesterone deficiency and related conditions with a stable composition of progesterone and tocopherols. 4,439,432, Cl. 424-240.000.

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Sondermeyer, Jack C., 4,439,742, Cl. 330-262.000.

PEDCO: *See*—
Congdon, Jon M., 4,439,032, Cl. 354-293.000.

Pedone, Egidio: *See*—
Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, 4,438,717, Cl. 112-227.000.

Peelle Company, The: *See*—
Almagor, Daniel, 4,439,103, Cl. 414-661.000.

Peil, Archie W.: *See*—
Bishop, Thomas R.; Peil, Archie W.; Kovar, Wayne A.; and Chancey, Roger D., 4,439,167, Cl. 464-20.000.

Peleg, Yigal, to Stouffer Corporation, The. Apparatus and method for the reconstitution of frozen foods in a microwave oven. 4,439,656, Cl. 219-10.55E.

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Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, to Norwich Eaton Pharmaceuticals, Inc. 2-[2-(5-Phenylfurfurylamino)ethyl]pyridines. 4,439,608, Cl. 546-283.000.

Pelz, Herbert, to Keiper Automobiltechnik GmbH & Co. KG. Swivel joint, especially for seats with adjustable backrest. 4,439,053, Cl. 403-101.000.

Pendergrass, Joseph C. Solar assisted heat pump heating system. 4,438,881, Cl. 237-2.00B.

Pennwalt Corporation: *See*—
Groepper, Jurgen, 4,439,388, Cl. 264-130.000.

Perez, Simon A., to Innovatec, Inc. Apparatus for mixing a comminuted food material and a liquid. 4,438,686, Cl. 99-353.000.

Perkins, Dale J.; and Lincicum, Leon L. Transport bracket for outboard motors. 4,438,899, Cl. 248-642.000.

Perlstein, Jerome H.; and Haley, Neil F., to Eastman Kodak Company. Electrical conductive compositions. 4,439,505, Cl. 430-58.000.

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Riley, Joseph L., 4,439,094, Cl. 414-786.000.

Perryman, John W., to Combustion Engineering, Inc. Electrostatic precipitator having apparatus for sensing electrostatic field strengths. 4,439,216, Cl. 55-104.000.

Pete, Sandor: *See*—
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Peters, Albin, to Wico Corporation. Drop target with cam means. 4,438,929, Cl. 273-127.00R.

Peters, Albin, to Wico Corporation. Rollover switch apparatus. 4,438,930, Cl. 273-127.00R.

Peters, William S., to Pierce Manufacturing, Inc. Paddle operated vehicle latch. 4,438,964, Cl. 292-216.000.

Petersen, Gerald W., to Zehntel, Inc. Digital in-circuit tester. 4,439,858, Cl. 371-20.000.

Petersen, Hans C.; and Sorensen, Soren N., to Danfoss A/S. Gerotor machine with commutating valving through the ring gear. 4,439,119, Cl. 418-61.00B.

Pettersson, Helge, to Gislaved Aktiebolag. Ground-engaging contact element for endless-track vehicles. 4,438,982, Cl. 305-35.0EB.

Pettibone Corporation: *See*—
Reilly, Clair H.; and Reilly, Robert M., 4,439,056, Cl. 404-90.000.

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Dietrich, Herbert, 4,438,711, Cl. 112-16.000.

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Pfeifer, Werner: *See*—
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Pflaugner, Josef: *See*—
Adelski, Hans-Joachim; and Pflaugner, Josef, 4,439,704, Cl. 310-211.000.

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Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, 4,439,651, Cl. 200-144.0AP.

Philip Morris Incorporated: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Phillips, David D.: *See*—
Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., 4,438,837, Cl. 198-735.000.

Phillips Petroleum Company: *See*—
Bertus, Brent J.; and McKay, Dwight L., 4,439,536, Cl. 502-64.000.
Cheng, Paul J.; and Mills, King L., 4,439,400, Cl. 422-111.000.
Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.
McDaniel, Max P.; and Stricklen, Phil M., 4,439,543, Cl. 502-228.000.
Parlman, Robert M.; and Bresson, Clarence R., 4,439,314, Cl. 209-166.000.
Shay, Lucas K.; and Wegner, Eugene H., 4,439,525, Cl. 435-247.000.

Phoenix Manufacturing, Inc.: *See*—
Koble, Robert L., Jr., 4,439,375, Cl. 261-29.000.

Piegay, Yves, to Skis Rossignol S.A. Slalom ski with vibration damper. 4,438,946, Cl. 280-602.000.

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Peters, William S., 4,438,964, Cl. 292-216.000.

Pierrel S.p.A.: *See*—
Toscano, Luciano; and Cappelletti, Leonardo M., 4,439,426, Cl. 424-181.000.

Pieters, Hans-Theo: *See*—
Konigs, Heinz; Kremer, Hubert; and Pieters, Hans-Theo, 4,438,786, Cl. 139-59.000.

Pigasse, Daniel, to I.C.I. Francolor S.A. Copper phthalocyanine pigments their preparation process and their use. 4,439,238, Cl. 106-20.000.

Pilgram, Kurt H., to Shell Oil Company. Herbicidal 4-((benzimidazol-1-yl)phenoxy)alkanoic acids, esters and salts. 4,439,226, Cl. 71-92.000.

Pioneer Electronic Corporation: *See*—
Furukawa, Hajime; and Ohta, Yoshitsugu, 4,439,784, Cl. 358-86.000.
Nakayama, Kazuaki, 4,439,745, Cl. 330-296.000.

Pirkle, Fred L. Freeze protection valve with improved resetting capability. 4,438,777, Cl. 137-62.000.

Pischtschan, Alfred: *See*—
Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, 4,439,589, Cl. 526-209.000.

Pissiotas, Georg: *See*—
Fory, Werner; Martin, Henry; and Pissiotas, Georg, 4,439,228, Cl. 71-95.000.
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Platt, Alan: *See*—
Dougherty, William E.; Feinberg, Irving; Humenik, James N.; and Platt, Alan, 4,439,813, Cl. 361-321.000.

Plessey Overseas Limited: *See*—
Wood, Robert S., 4,439,109, Cl. 418-88.000.

Plies, Erich, to Siemens Aktiengesellschaft. Corpuscular beam blanking system. 4,439,685, Cl. 250-398.000.

Plough, Irving L., to Kimwood Corporation. Flexible platen planer. 4,438,795, Cl. 144-373.000.

Pocsy, Ferenc: *See*—
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Pokladnik, Roger L.; and Valka, William A., to Armco Inc. Subsea well with retrievable piping deck. 4,438,817, Cl. 166-341.000.

Pokladnik, Roger L., to Armco Inc. Releasable guide post mount and method for recovering guide posts by remote operations. 4,439,068, Cl. 405-169.000.

Polaroid Corporation: *See*—
Paglia, Richard, 4,439,641, Cl. 179-111.00R.
Reynard, John M., 4,439,642, Cl. 179-111.00R.
Rodriguez, Marie T., 4,439,846, Cl. 367-99.000.

Poletto, John F.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

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Gruszecki, Wojciech A.; Busko-Oszczopowicz, Irena M.; Gdulewicz-Gruszecka, Maria; Cieslak, Jerzy J.; Borowski, Edward; and Gumiezna, Teresa, 4,439,363, Cl. 260-239.100.

Pollution Controls Industries, Inc.: *See*—
Curtis, Stanley F., 4,438,945, Cl. 280-501.000.

Polymer Composites, Inc.: *See*—
Hawley, Ronald C., 4,439,387, Cl. 264-108.000.

Pongratz, Leonhard: *See*—
Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, 4,438,677, Cl. 89-36.00K.

Pons, Roberto E. Apparatus for automatic creeling in ring spinning frames. 4,438,622, Cl. 57-261.000.

Poppe, Lee W., Jr.: *See*—
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., 4,438,682, Cl. 99-323.700.

Porter, John T., II, to GA Technologies Inc. Separation of uranium isotopes. 4,439,404, Cl. 423-3.000.

Porter, Wilbur A.: *See*—
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,438,557, Cl. 29-576.00B.

Post, Robert E.: *See*—
Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., 4,439,465, Cl. 427-115.000.

Postle, Stephen R., to Ciba-Geigy A.G. Process for the production of a photographic image. 4,439,518, Cl. 430-402.000.

Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, to Bell Telephone Laboratories, Incorporated. X-Ray source and method of making same. 4,439,870, Cl. 378-143.000.

Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, to International Business Machines Corporation. Process for the controlled etching of tapered vias in borosilicate glass dielectrics. 4,439,270, Cl. 156-644.000.

Powell, Mark S.: *See*—
Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., 4,439,493, Cl. 428-414.000.

Powell, Steven H., to Iomega Corporation. Servo control of seek operation in magnetic disk drive. 4,439,800, Cl. 360-78.000.

PPG Industries, Inc.: *See*—
Girgis, Mikhail M., 4,439,556, Cl. 523-206.000.
Greigger, Paul P.; Boberski, William G.; and Seiner, Jerome A., 4,439,239, Cl. 106-287.160.
Tamosauskas, Albert E.; and Temple, Chester S., 4,439,558, Cl. 523-217.000.
Valimont, James L., 4,439,264, Cl. 156-556.000.

Pratt, Clyde R.; and Carignan, Roger G. Medical staple device. 4,438,769, Cl. 128-334.00R.

Prengaman, Raymond D., to RSR Corporation. Method of alloying calcium and aluminum into lead. 4,439,398, Cl. 420-564.000.

Price, Benjamin J.: *See*—
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Priepke, Edward H.; and McAllister, Ronald L., to Sperry Corporation. Screen cleaning means. 4,439,218, Cl. 55-288.000.

Prize Frize, Inc.: *See*—
Bartfield, William, 4,438,683, Cl. 99-330.000.

Prizzia, Thomas C.: *See*—
Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, 4,439,250, Cl. 148-23.000.

Process Equipment Corporation: *See*—
McGuffey, James W., 4,438,861, Cl. 220-86.00R.

Procter & Gamble Company, The: *See*—
Burns, Michael E., 4,439,335, Cl. 252-8.750.
Ooms, Julius, 4,439,330, Cl. 252-8.800.
Sagel, Paul J., 4,439,474, Cl. 428-90.000.

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Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, to Chesebrough-Pond's Inc. Underwater drainage device. 4,439,190, Cl. 604-319.000.

Proverb, Robert J.: *See*—
Raghu, Sivaraman; Proverb, Robert J.; and Peake, Steven L., 4,439,611, Cl. 548-533.000.

Psaras, John: *See*—
Frey, Bill; Haynie, Mark; and Psaras, John, 4,439,213, Cl. 55-31.000.

Pugsley, Peter C.: *See*—
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Pulciani, Sam C.: *See*—
Holk, Albert J.; and Pulciani, Sam C., 4,439,081, Cl. 413-1.000.

Puppe, Lothar; and Weisser, Jurgen, to Bayer Aktiengesellschaft. Crystalline aluminosilicate PSH-3 and its process of preparation. 4,439,409, Cl. 423-328.000.

Puri, Ajai, to Coca-Cola Company, The. Preparation of citrus juices, concentrates and dried powders which are reduced in bitterness. 4,439,458, Cl. 426-330.500.

Quaker Oats Company, The: *See*—
Akerberg, Denis W., 4,439,348, Cl. 252-426.000.
Bogner, Ben R., 4,439,568, Cl. 524-111.000.

Quermann, Thomas R., to Sperry Corporation. Flexure suspension for free rotor gyroscopes. 4,438,655, Cl. 74-5.00F.

Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., to Vetco Offshore, Inc. Anchor connector. 4,439,055, Cl. 403-330.000.

Qureshi, Shahid U. H., to Codex Corporation. Modem circuitry. 4,439,864, Cl. 375-98.000.

R. J. Reynolds Tobacco Company: *See*—
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,438,775, Cl. 131-300.000.

R. Jennings Manufacturing Company, Inc.: *See*—
Serrianne, Russell A.; and Jennings, Roger L., 4,438,693, Cl. 101-129.000.

Rabas, Kenneth J., to DCI Marketing. Display case including improved hinge connection arrangement. 4,438,993, Cl. 312-140.000.

Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, to Societe d'Assistance Technique pour Produits Nestle S.A. Installation for solubilizing cocoa. 4,438,681, Cl. 99-323.200.

Radebold, Reinhart. Concentrating reflector for solar radiation of low aerodynamic friction force and high aerodynamic buoyancy force. 4,438,760, Cl. 126-438.000.

Rader, James L.: *See*—
Montealegre, James; and Rader, James L., 4,438,848, Cl. 206-588.000.

Raghu, Sivaraman; Proverb, Robert J.; and Peake, Steven L., to American Cyanamid Company. Isolation of [S-(R*, S*)]-1-(3-acetylthio-3-benzoyl-2-methylpropionyl)-L-proline from a diastereomeric mixture. 4,439,611, Cl. 548-533.000.

Raiha, Antti P. Center locator for alignment of work to machine spindle. 4,438,567, Cl. 33-286.000.

Railtech Ltd.: *See*—
MacDonald, John A., 4,438,595, Cl. 49-219.000.

Raith, Richard L.; and Davenport, Joseph A., to Hauserman, Inc. Demountable interior partition system and components therefor. 4,438,614, Cl. 52-580.000.

Ramanan, V. R. V., to Allied Corporation. Cobalt rich manganese containing near-zero magnetostrictive metallic glasses having high saturation induction. 4,439,253, Cl. 148-403.000.

Ramaswamy, Vellayan: *See*—
Alferness, Rodney C.; Buhl, Lawrence L.; Jackel, Janet L.; Lyman, Susan P.; and Ramaswamy, Vellayan, 4,439,265, Cl. 156-606.000.

Ranganathan, Ramachandran: *See*—
Sovak, Milos; and Ranganathan, Ramachandran, 4,439,613, Cl. 549-347.000.

Rao, Velliyur Nott M., to Du Pont de Nemours, E. I., and Company. Production of formaldehyde. 4,439,625, Cl. 568-473.000.

Raudys, Vytas A.: *See*—
Kupcikevicius, Vytautas; and Raudys, Vytas A., 4,438,545, Cl. 17-49.000.

Rauth, Erich; and Schmack, Hans-Jurgen, to Licentia Patent-Verwaltungs-GmbH. Digital data transmission system. 4,439,857, Cl. 370-100.000.

Rawicki, Bogdan J. Apparatus and method for extracting dust from air. 4,439,215, Cl. 55-95.000.

Ray, Ranjan, to Allied Corporation. Complex boride particle containing alloys. 4,439,236, Cl. 75-123.00B.

Raymond Corporation, The: *See*—
Allen, Ralph E., 4,439,102, Cl. 414-633.000.

Raytheon Company: *See*—
Wilkes, Dean M., 4,439,827, Cl. 364-200.000.

RCA Corporation: *See*—
Butterwick, Gilbert N., 4,439,712, Cl. 313-533.000.
Dholakia, Anil R., 4,439,853, Cl. 369-126.000.
Dholakia, Anil R., 4,439,855, Cl. 369-126.000.
Hughes, Larry M., 4,439,852, Cl. 369-77.200.
Kumar, Mahesh; and Upadhyayula, Lakshminarasimha C., 4,439,744, Cl. 330-285.000.
Louik, Leonard; and Ballard, Richard E., 4,439,128, Cl. 425-290.000.
Mattei, Anthony, 4,439,737, Cl. 329-50.000.
Miller, Michael E., 4,439,854, Cl. 369-126.000.
Rickman, James D., Jr., 4,439,728, Cl. 324-164.000.
Riddle, Michael H.; and Orr, John R., 4,439,804, Cl. 361-92.000.
Sohn, Frank M., 4,439,709, Cl. 313-406.000.
Wu, Chung P., 4,439,245, Cl. 148-1.500.

Rees, Herbert; Brown, Paul; and Grund, Miroslaw, to Husky Injection Molding Systems Ltd. Turret-type injection-molding machine. 4,439,133, Cl. 425-556.000.

Rees, Richard W. A., to General Motors Corporation. Vertical seat adjuster for vehicle seats. 4,438,895, Cl. 248-396.000.

Refined Industry Company, Limited, The: *See*—
Lee, Cheuk-Ming, 4,438,590, Cl. 46-257.000.

Regan, John F., to Rockwell International. Switching regulator with controlled simulated load. 4,439,819, Cl. 363-17.000.

Regie Nationale des Usines Renault: *See*—
Nartowski, Andre, 4,439,377, Cl. 261-52.000.

Rehberg, Heinrich: *See*—
Karrenbauer, Kurt; Behringer, Hartmut; and Rehberg, Heinrich, 4,439,361, Cl. 260-141.000.

Reichman, Benjamin; and Byvik, Charles E., to United States of America, National Aeronautics and Space Administration. Photoelectrochemical cells including chalcogenophosphate photoelectrodes. 4,439,301, Cl. 204-278.000.

Reid, Lloyd E.: *See*—
Gudelis, David A.; and Reid, Lloyd E., 4,439,308, Cl. 208-33.000.

Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., to United States of America, National Aeronautics and Space Administration. Method of making a light weight battery plaque. 4,439,465, Cl. 427-115.000.

Reifschneider, Walter, to Dow Chemical Company, The. O,O-Diethyl O-[(p-tertiarybutylthio)phenyl]phosphorothioates and its insecticidal use. 4,439,430, Cl. 424-216.000.

Reifschneider, Walter, to Dow Chemical Company, The. O,O-Diethyl O-((4-tertiarybutylsulfonyl)m-tolyl)phosphorothioate and its insecticidal use. 4,439,431, Cl. 424-216.000.

Reilly, Clair H.; and Reilly, Robert M., to Pettibone Corporation. Machine suitable for breaking concrete pavement in place. 4,439,056, Cl. 404-90.000.

Reilly, Robert M.: *See*—
Reilly, Clair H.; and Reilly, Robert M., 4,439,056, Cl. 404-90.000.

Reimer, Bernd: *See*—
Lutz, Manfred; and Reimer, Bernd, 4,439,508, Cl. 430-84.000.

Reiner, Norbert L.; and Sledesky, Stephen M., to Coleco Industries, Inc. Joystick-type controller. 4,439,648, Cl. 200-6.00A.

Reinhardt, Rudolf: *See*—
Galtz, Rudiger; and Reinhardt, Rudolf, 4,439,095, Cl. 415-52.000.

Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, to BASF Aktiengesellschaft. Preparation of aqueous thermosetting electrical insulating varnishes. 4,439,579, Cl. 524-602.000.

Reitz, Roderick, to General Electric Company. Secondary arrester. 4,439,807, Cl. 361-127.000.

Remp, Thomas E.: *See*—
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, 4,438,783, Cl. 138-89.000.
Remp, Thomas E., Jr.: *See*—
Dreyfuss, Wilfried; Remp, Thomas E., Jr.; and Muller, Kurt, 4,438,783, Cl. 138-89.000.
Reneau, Bobby J.; and Morris, Bruce E., to Gripper, Inc. Apparatus for tensioning a stud and method of doing same. 4,438,901, Cl. 254-29.00A.
Renz, Dieter; and Loper, Bernd, to Daimler-Benz Aktiengesellschaft. Wheel cover. 4,438,979, Cl. 301-37.0PB.
Research Corporation: *See*—
Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.
Research Holdings Pty Limited: *See*—
McLoughlin, Arthur R., 4,439,510, Cl. 430-137.000.
Rexnord Inc.: *See*—
Hodlewsky, Wasyly G.; and Schroeder, Roger H., 4,438,838, Cl. 198-853.000.
Reynard, John M., to Polaroid Corporation. High energy ultrasonic transducer. 4,439,642, Cl. 179-111.00R.
Reynolds Metals Company: *See*—
Kahn, Merle S., 4,438,850, Cl. 206-634.000.
Rhodes, Arthur B. Endless conveyor system. 4,438,702, Cl. 104-172.00B.
Rhodes, Junior I., to General Electric Company. Laser adjustable capacitor and fabrication process. 4,439,814, Cl. 361-321.000.
Rhodes, Richard P., to Exxon Research and Engineering Co. Process for pyrolysis of carbonous materials. 4,439,305, Cl. 208-10.000.
Rhone-Poulenc Specialites Chimiques: *See*—
Schuppiser, Jean-Luc; and Daniel, Jean-Claude, 4,439,574, Cl. 524-458.000.
Rib Loc (H.K.) Limited: *See*—
Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,438,643, Cl. 72-49.000.
Rice, Doris M.: *See*—
Brennan, Michael E.; and Rice, Doris M., 4,439,546, Cl. 521-48.000.
Rice, Ivan G. Reheat gas turbine combined with steam turbine. 4,438,625, Cl. 60-39.170.
Rice, Robert R.: *See*—
Stacy, Robert A.; and Rice, Robert R., 4,439,014, Cl. 350-388.000.
Rich, Roland; Villiger, Alois; and Widmer, Erich, to Hoffmann-La Roche Inc. Disubstituted ethanes. 4,439,015, Cl. 350-350.00R.
Richards, Joseph M. Chlorine generating apparatus. 4,439,295, Cl. 204-229.000.
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Keyes, George B.; and Richards, Randall G., 4,438,534, Cl. 4-227.000.
Richardson-Merrell Inc.: *See*—
Giroux, Eugene L., 4,439,443, Cl. 424-285.000.
Rickman, James D., Jr., to RCA Corporation. Motion sensor utilizing eddy currents. 4,439,728, Cl. 324-164.000.
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Ohta, Masafumi; and Sasaki, Masaomi, 4,439,506, Cl. 430-58.000.
Yano, Takashi, 4,439,781, Cl. 346-153.100.
Riddle, Michael H.; and Orr, John R., to RCA Corporation. Protection circuit for memory programming system. 4,439,804, Cl. 361-92.000.
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Oswald, Peter, 4,438,623, Cl. 57-275.000.
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Tateno, Haruo, 4,439,662, Cl. 219-121.0PY.
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Ritter, Gerhard: *See*—
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Rivera, Alfredo. High pressure toilet water feeder conversation tank. 4,438,536, Cl. 4-343.000.
Rizaev, Ramiz G. K. O.; Mirstaev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K. Method for preparing phthalonitriles. 4,439,371, Cl. 260-465.00C.
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Greiner, Max, 4,438,746, Cl. 123-373.000.
Kuhn, Willi; and Mausner, Eberhard, 4,439,820, Cl. 363-21.000.
Robert, Jacques: *See*—
Delaplace, Lucien; and Robert, Jacques, 4,438,707, Cl. 110-264.000.
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Moser, Helmut; and Robinson, Tibor, 4,439,208, Cl. 8-556.000.
Rock, John G. Receptacle for the collection of medical specimens and the like. 4,439,319, Cl. 210-238.000.
Rockwell International: *See*—
Regan, John F., 4,439,819, Cl. 363-17.000.
Rockwell International Corporation: *See*—
Bellamy, John C., 4,439,863, Cl. 375-18.000.
Best, David W.; and Russell, Jeffrey D., 4,439,835, Cl. 364-786.000.
Harrington, Timothy A., 4,439,740, Cl. 330-124.00R.
Minella, Giancarlo; Motta, Bruno; and Pedone, Egidio, 4,438,717, Cl. 112-227.000.
Walter, Robert J., 4,439,284, Cl. 204-43.00T.
Rockwood, Robert E.; and Antkowiak, Richard P., to A. W. Chesterton Company. Impeller adjuster for centrifugal pump. 4,439,096, Cl. 415-131.000.
Rodriguez, Marie T., to Polaroid Corporation. Sonar rangefinder system. 4,439,846, Cl. 367-99.000.
Rodriguez, Thomas A.; and Zavaglia, Angelo J. Handcart for banquet tables. 4,439,085, Cl. 414-447.000.
Roe, George W., to McDonnell Douglas Corporation. End caps for use with a launch environment simulator process and structure. 4,439,155, Cl. 434-12.000.
Roe, Jonas L., to Terradyne Limited. Continuous excavating apparatus. 4,438,575, Cl. 37-4.000.
Roes, Christian: *See*—
Gebhardt, Axel; Jurgensen, Heinrich; and Roes, Christian, 4,439,022, Cl. 350-572.000.
Rogers Corporation: *See*—
Mueller, Richard W., 4,438,561, Cl. 29-831.000.
Rogers, Robert C.: *See*—
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,438,557, Cl. 29-576.00B.
Rohanna, James E., to Westinghouse Electric Corp. Elevator system. 4,438,831, Cl. 187-30.000.
Rohde, Thomas D.: *See*—
Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., 4,439,181, Cl. 604-56.000.
Rohm and Haas Company: *See*—
Swithenbank, Colin, 4,439,229, Cl. 71-96.000.
Rohner, Joachim, to W. Schlafhorst & Co. Thread joining device. 4,438,621, Cl. 57-22.000.
Rojas, Fernando: *See*—
Everett, Douglas H.; Bligh, Stephen G.; and Rojas, Fernando, 4,439,349, Cl. 502-180.000.
Rolf Baumgartner AG: *See*—
Buttiker, Urs, 4,439,044, Cl. 366-292.000.
Roller, Donald C.: *See*—
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.
Rolls Royce Limited: *See*—
Jones, Thomas J.; and Curtis, David S., 4,438,956, Cl. 285-223.000.
Pask, George; and Golton, Howard J., 4,438,939, Cl. 277-236.000.
Rolstad, Erik, to Scandpower, Inc. Multijunction difference thermocouples for gamma sensors. 4,439,396, Cl. 376-247.000.
Roncucci, Romeo: *See*—
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Roper, Linwood W., Jr., to Sonoco Products Company. Piling encasement system. 4,439,071, Cl. 405-216.000.
Rosas, Carlos B.: *See*—
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.
Rosenberg, Heinz-Jurgen: *See*—
Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jurgen, 4,439,262, Cl. 156-364.000.
Rosenberger, Siegfried; Evans, Samuel; and Gilg, Bernard, to Ciba-Geigy Corporation. Mercaptophenol stabilizers. 4,439,615, Cl. 560-15.000.
Rosin, Michael L.: *See*—
O'Connor, James M.; Lickei, Donald L.; and Rosin, Michael L., 4,439,576, Cl. 524-425.000.
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Rotblum, Yehuda: *See*—
Bartoli, Thomas J.; and Rotblum, Yehuda, 4,439,691, Cl. 307-279.000.
Roth, Ronald B., to Honeywell Inc. Remote counter-balancing mechanism. 4,439,003, Cl. 350-6.600.
Rothbuhr, Lothar: *See*—
Voll, Manfred; Rothbuhr, Lothar; and Kuhner, Gerhard, 4,439,401, Cl. 422-150.000.
Rothstein, Andrew M., to Rothstein, Harold Louis; and Rothstein, Arthur. Aquatic body board. 4,439,165, Cl. 441-74.000.
Rothstein, Arthur: *See*—
Rothstein, Andrew M., 4,439,165, Cl. 441-74.000.
Rothstein, Harold Louis: *See*—
Rothstein, Andrew M., 4,439,165, Cl. 441-74.000.
Roussel Uclaf: *See*—
Heymes, Rene; and Vignau, Michel, 4,439,433, Cl. 424-246.000.
Roveda, Ronald P.: *See*—
Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, 4,439,190, Cl. 604-319.000.
Rowe, George H., to Combustion Engineering, Inc. Method and system for maintaining operating temperatures in a molten salt co-generating unit. 4,438,630, Cl. 60-676.000.

Royer, Michel E., to S. T. Dupont. Stratified corrosion-resistant complex. 4,439,499, Cl. 428-670.000.
Rozas, Patrick: *See*—
Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, 4,439,766, Cl. 343-9.00R.
RSR Corporation: *See*—
Prengaman, Raymond D., 4,439,398, Cl. 420-564.000.
Rudi, Guttorm, to Tandberg Data A/S. Suspension for the pivotably seated tape drive motor in a cassette magnetic tape device. 4,438,879, Cl. 226-188.000.
Rudolf, Peter: *See*—
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
Rudolph, Eugene D.: *See*—
George, John W.; and Rudolph, Eugene D., 4,438,696, Cl. 101-180.000.
Ruegg, Rudolf, to Hoffmann-La Roche Inc. Extraction process for beta-carotene. 4,439,629, Cl. 585-803.000.
Ruger, William B., to Sturm, Ruger & Company, Inc. Bolt stop and cartridge ejector for auto-loading rifle. 4,438,678, Cl. 89-138.000.
Ruhrgas Aktiengesellschaft: *See*—
Altemark, Detlef; Sommers, Hans; and Weid, Manfred, 4,439,135, Cl. 431-2.000.
Rulseh, Roy M.: *See*—
Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., 4,439,138, Cl. 431-12.000.
Runyon, James R.; and Valenti, Salvatore, to Sandoz Ltd. Process for improving the wetfastness of dyeings, printings and optical brightenings on cellulosic substrates and compositions useful therefor. 4,439,203, Cl. 8-496.000.
Russell, Jeffrey D.: *See*—
Best, David W.; and Russell, Jeffrey D., 4,439,835, Cl. 364-786.000.
Russell, Larry R. Clamp-on drill collar stabilizers. 4,438,822, Cl. 175-325.000.
Rut, Tadeusz, to Instytut Obrobki Plastycznej. Forging device. 4,438,644, Cl. 72-356.000.
Ruti Machinery Works Ltd.: *See*—
Steiner, Alois, 4,438,790, Cl. 139-435.000.
Rutigliano, Olha: *See*—
Acharya, Shankar C.; Prizzia, Thomas C.; and Rutigliano, Olha, 4,439,250, Cl. 148-23.000.
Ryals, Lloyd E. Rice levee shaper and packer. 4,438,819, Cl. 172-536.000.
Ryan, Bobby W., to WFI International, Inc. Acute angled vessel connector. 4,438,955, Cl. 285-189.000.
Ryan, Robert C.: *See*—
Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., 4,439,624, Cl. 568-470.000.
Ryffel, Louis. Instantaneous electrode-type water heater. 4,439,669, Cl. 219-289.000.
Rysin, Nikolai I.: *See*—
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.
S-Cubed: *See*—
Duff, Russell E., 4,438,708, Cl. 110-346.000.
S. T. Dupont: *See*—
Royer, Michel E., 4,439,499, Cl. 428-670.000.
Saban, C. John, to Caterpillar Tractor Co. Crankshaft journal surface gauge and kit thereof. 4,438,646, Cl. 73-105.000.
Sach, George S.: *See*—
Cooper, David G.; and Sach, George S., 4,439,609, Cl. 546-334.000.
Sachs, Peter R.; and Sears, James W., to Tarkett AB. Radiation cured coating and process therefor. 4,439,480, Cl. 428-161.000.
Sackis, John J.; and Anderson, Paul H., to W. R. Meadows, Inc. Water based concrete cure. 4,439,563, Cl. 524-96.000.
Sacks, Jacob M.: *See*—
Coleman, Guy B.; Henderson, James W.; and Sacks, Jacob M., 4,439,840, Cl. 364-900.000.
Sadowski, Edward P., to International Nickel Company, Inc., The. Corrosion resistant stainless steel covered electrode. 4,439,498, Cl. 428-558.000.
Saeki, Tsuyoshi: *See*—
Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, 4,438,803, Cl. 164-472.000.
Saeki, Yukihiro: *See*—
Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, 4,439,697, Cl. 307-530.000.
Sagel, Paul J., to Procter & Gamble Company, The. Disposable floor mat with improved wet soil absorptivity. 4,439,474, Cl. 428-90.000.
St. John, James C.: *See*—
Loesch, Stanley B.; St. John, James C.; and Mints, Danny K., 4,438,729, Cl. 122-26.000.
Saito, Hiroyuku: *See*—
Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, 4,439,352, Cl. 252-518.000.
Saito, Kouji, to Hitachi, Ltd. Ultrasonic Doppler flowmeter. 4,438,652, Cl. 73-861.250.
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, to Yoshino Kogyosho Co., Ltd. Method of producing synthetic resin bottle with handle. 4,439,393, Cl. 264-532.000.
Sakaki, Yorihisa: *See*—
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.
Sakamoto, Kiyoshi: *See*—
Shimada, Hiroshi; and Sakamoto, Kiyoshi, 4,439,810, Cl. 361-272.000.
Sakata, Hideo; Mizuno, Ichiro; and Nakahara, Masao, to Mitutoyo Mfg. Co., Ltd. Inner diameter measuring instrument. 4,438,566, Cl. 33-178.00R.
Sakuyama, Masaki: *See*—
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Salaman, Roy G., to Lord Electric Company, Inc. Control system for automated manipulator device. 4,439,672, Cl. 235-463.000.
Samant, Vijay: *See*—
Krieger, Kenneth H.; Naldi, Lawrence J.; Rosas, Carlos B.; and Samant, Vijay, 4,439,623, Cl. 568-393.000.
Samuelson, Hans O., to Mo och Domsjo Aktiebolag. Process for the oxygen bleaching of cellulose pulp. 4,439,271, Cl. 162-19.000.
Sanden Corporation: *See*—
Iimori, Takayuki, 4,439,118, Cl. 418-55.000.
Sanders Associates, Inc.: *See*—
Sands, Timothy B.; and Sinclair, Ronald R., 4,438,893, Cl. 244-3.210.
Viglione, Gaetano T., 4,439,289, Cl. 204-146.000.
Sandoz Ltd.: *See*—
Altermatt, Ruedi; and Jakob, Hans, 4,439,207, Cl. 8-639.000.
Bohler, Hans, 4,439,562, Cl. 524-90.000.
Koerte, Klaus, 4,439,362, Cl. 260-152.000.
Moser, Helmut; and Robinson, Tibor, 4,439,208, Cl. 8-556.000.
Runyon, James R.; and Valenti, Salvatore, 4,439,203, Cl. 8-496.000.
Sands, Timothy B.; and Sinclair, Ronald R., to Sanders Associates, Inc. Prime power source and control for a guided projectile. 4,438,893, Cl. 244-3.210.
Sanford, Robert A.: *See*—
Lamb, Charles G.; and Sanford, Robert A., 4,438,776, Cl. 131-336.000.
Sanmiya, Tsugumi: *See*—
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.
Sano, Tsutomu; Takeuchi, Naoki; and Kurumaji, Masanobu, to Kabushiki Kaisha Kobe Seiko Sho. Injection molding machine. 4,439,123, Cl. 425-112.000.
Sano, Yutaka: *See*—
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SANOFI: *See*—
Chick, Jacques A.; Heymes, Alain; and Blasioli, Carlo, 4,439,442, Cl. 424-285.000.
Nisato, Dino; Boveri, Sergio; Bianchetti, Alberto; Roncucci, Romeo; and Carminati, Paolo, 4,439,444, Cl. 424-285.000.
Sanraku-Ocean Co., Ltd.: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.
Santa Barbara Research Center: *See*—
Davis, Roland O., 4,438,983, Cl. 308-2.00A.
Santen, Sven; and Edstrom, John O., to SKF Steel Engineering Aktiebolag. Method of manufacturing silicon from powdered material containing silica. 4,439,410, Cl. 423-350.000.
Santora, Frank. Vertical bearing assembly. 4,438,988, Cl. 308-174.000.
Sanyo Electric Co., Ltd.: *See*—
Takahara, Ichiro; and Yabu, Tadahiko, 4,439,850, Cl. 369-77.200.
Sarcia, Domenico S., to CVI Incorporated. Cryogenic refrigerator. 4,438,631, Cl. 62-6.000.
Sargeant, John E.; and Hoffa, Jack L., to Bentley Laboratories, Inc. Pleural drainage system. 4,439,189, Cl. 604-317.000.
Sarnecki, Wilhelm: *See*—
Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, 4,439,231, Cl. 75-0.5AA.
Sasaki, Masaomi: *See*—
Ohta, Masafumi; and Sasaki, Masaomi, 4,439,506, Cl. 430-58.000.
Sasaki, Tateyo: *See*—
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Capacitor. 4,439,811, Cl. 361-313.000.
Sasaki, Yoshihiro, to Yanmar Diesel Engine Co., Ltd. Air cooled internal combustion engine. 4,438,733, Cl. 123-41.620.
Sasaki, Yoshikazu. Pipe shearing device. 4,438,672, Cl. 83-319.000.
Sato, Kozo; Fujita, Shinsaku; Naito, Hideki; and Hara, Hiroshi, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material with naphthol redox dye releaser. 4,439,513, Cl. 430-203.000.
Sato, Makoto; and Fujii, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for simultaneously adjusting fluid pressures in a dual fluid system and associated method. 4,438,629, Cl. 60-579.000.
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for controlling an anti-skid brake system. 4,439,832, Cl. 364-426.000.
Sato, Seiichi: *See*—
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.
Sato, Shigeru: *See*—
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Sato, Yo; Kashiwaba, Tadao; and Matsuda, Yasuhiko, to Kabushiki Kaisha Sato. Label printing and applying apparatus. 4,439,257, Cl. 156-64.000.

Satronic AG: *See*—
Frehner, Herbert, 4,438,882, Cl. 239-462.000.

Savin Corporation: *See*—
Landa, Benzion, 4,439,035, Cl. 355-15.000.

Sawada, Yoshihisa: *See*—
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.

Sawamoto, Kunifumi: *See*—
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.

Scalzo, John P., to Gentex Corporation. Sound attenuating earcup assembly with outside communication capability. 4,439,645, Cl. 179-156.00R.

Scandpower, Inc.: *See*—
Rolstad, Erik, 4,439,396, Cl. 376-247.000.

Scapa Inc.: *See*—
Harwood, William J., 4,438,788, Cl. 139-383.00A.

Scattaregia, Joseph J., to Scattaregia, Joseph J. Anti-spill lid for a drinking cup. 4,438,865, Cl. 220-270.000.

Schaefer, Wolfgang, to Gildemeister AG. Workpiece handling apparatus. 4,439,090, Cl. 414-736.000.

Schaeffer, Gerard; and Hoffarth, Dieter, to Paul Kiefel GmbH. Feed bushing for single-screw extruders. 4,439,041, Cl. 366-144.000.

Schaeper, Gary R.; and Olson, Richard A., to NL Industries, Inc. Locking mechanism for annular blowout preventer. 4,438,900, Cl. 251-1.00B.

Schafer, Willi, to Stabilus GmbH. Piston for a pneumatic, hydraulic, or hydropneumatic installation. 4,438,833, Cl. 188-320.000.

Schalk, Bartje; Operti, Claudio; and Bras, Johan C., to SKF Industrial Trading & Development Co. B.V. Sealing assembly for a rolling bearing. 4,438,990, Cl. 308-187.100.

Schank, Richard L., to Xerox Corporation. Process for preparing overcoated electrophotographic imaging members. 4,439,509, Cl. 430-132.000.

Schaper, Raymond J., to Calgon Corporation. Cationic water-in-oil polymer emulsions. 4,439,580, Cl. 524-801.000.

Schaub, Robert E.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

Scheib, Joseph J. Flexible light display with evenly distributed illumination. 4,439,818, Cl. 362-250.000.

Schenck, Hans-Uwe: *See*—
Reiter, Udo; Schenck, Hans-Uwe; Lehmann, Helmut; and Hansch, Ferdinand, 4,439,579, Cl. 524-602.000.

Schenk, Hanspeter, to Givaudan Corporation. Esters of substituted 2,2-dimethylcyclohexanoic acid. 4,439,353, Cl. 252-522.00R.

Schenk, Roy U., to Jorksten Research Laboratories, Inc. Proteolytic enzyme composition. 4,439,522, Cl. 435-188.000.

Scheuermann, Klaus: *See*—
Brunner, Herbert; Christ, Bernhard; Henss, Wilhelm; Pfeifer, Werner; and Scheuermann, Klaus, 4,439,403, Cl. 422-159.000.

Schindler, Harvey D.; and Sze, Morgan C., to Lummus Company, The. Removal of arsenic impurity from hydrocarbons. 4,439,313, Cl. 208-251.00H.

Schink, Dave K. Stock rack and loading chute for trucks. 4,439,087, Cl. 414-537.000.

Schlegel Corporation: *See*—
Nielson, Erik I.; and Hope, Robert B., 4,438,609, Cl. 52-208.000.

Schlegel, Rainer. Secondary sealing element with U-shaped sealing ring for mechanical seals. 4,438,936, Cl. 277-212.00C.

Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, to Arbed S.A. Method of increasing the cold material charging capacity in the top-blowing production of steel. 4,439,234, Cl. 75-52.000.

Schlumberger Technical Corporation: *See*—
Sinclair, Paul L., 4,439,831, Cl. 364-422.000.

Schmack, Hans-Jurgen: *See*—
Rauth, Erich; and Schmack, Hans-Jurgen, 4,439,857, Cl. 370-100.000.

Schmidt, Dieter, to Volkswagenwerk Aktiengesellschaft. Control system for an automobile drive. 4,438,665, Cl. 74-867.000.

Schmidt, Gerhard; Ritter, Klaus; Ritter, Gerhard; Gott, Hans; and Ritter, Josef, to EVG Entwicklungs-und Verwertungs Gesellschaft m.b.H. Apparatus for producing welded wire grids. 4,439,658, Cl. 219-56.000.

Schmitt, Joseph M.: *See*—
Frank, Simon; Coscia, Anthony T.; and Schmitt, Joseph M., 4,439,332, Cl. 252-8.55D.

Schmitt, Peter D.: *See*—
Kelso, Robert G.; Ahuja, Meena S.; and Schmitt, Peter D., 4,439,593, Cl. 528-45.000.

Schmolke, Karl H.; Finsterbusch, Joachim; and Loffler, Walter, to Hollingsworth GmbH. Carding element for a carding machine. 4,438,547, Cl. 19-98.000.

Schneider, Claus; and Benczur-Urmossy, Gabor, to Deutsche Automobilgesellschaft. Process for producing a stable connection between an electrode structure made from a metallized body of a fibrous nature and a current lead out tab. 4,439,281, Cl. 204-2.100.

Schneider, Randy G.: *See*—
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Scholpp, Werner: *See*—
Hochreuther, Karl; Heinze, Siegfried; and Scholpp, Werner, 4,439,726, Cl. 324-156.000.

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Schroder, William J., to Milliken Research Corporation. Bobbin lock. 4,438,890, Cl. 242-130.000.

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Alberts, Heinrich; Schubart, Rudiger; and Pischtschan, Alfred, 4,439,589, Cl. 526-209.000.

Schubert, Hiltmar: *See*—
Hansen, Rolf; Engel, Walter; and Schubert, Hiltmar, 4,439,622, Cl. 564-406.000.

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Mayer, Walter; and Wittmann, Stephan, 4,438,624, Cl. 57-352.000.

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Aiena, Peter P.; and Schulz, Eduard, 4,439,837, Cl. 364-900.000.

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Schwarz, Manfred; and Higuchi, Tadashi, to Sony Corporation. Biasing circuit for power amplifier. 4,439,743, Cl. 330-267.000.

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Schweizer, Rene. System assembly for mounting electrical apparatus on walls and ceilings. 4,439,643, Cl. 179-146.00E.

Schwendemann, Volker: *See*—
Koenig, Karl-Heinz; and Schwendemann, Volker, 4,439,369, Cl. 260-453.00P.

Schwinn Bicycle Company: *See*—
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Litchfield, Philip F., 4,439,816, Cl. 362-96.000.

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Sciola, Joseph; and Nagy, Gabor. Ram drive chuck. 4,438,554, Cl. 29-57.000.

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Osborne, Trevor R., 4,439,559, Cl. 523-513.000.

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Audeh, Costandi A.; and Scott, Eric J. Y., 4,439,310, Cl. 208-111.000.

Sears, James W.: *See*—
Sachs, Peter R.; and Sears, James W., 4,439,480, Cl. 428-161.000.

SEB S.A.: *See*—
Daloz, Joanny, 4,439,043, Cl. 366-164.000.

See, Benito: *See*—
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.

Seelinger, Hugh D., to International Business Machines Corp. Self-aligning web reel. 4,438,888, Cl. 242-56.900.

Segawa, Takashi, to Shimano Industrial Company Limited. Chain gear and crank mounting assembly. 4,439,172, Cl. 474-160.000.

Seidel, Albert; and Wolf, Dietmar, to Messerschmitt-Bolkow-Blohm GmbH. Solar pumping installation for pumping liquid and solar collector construction. 4,439,111, Cl. 417-379.000.

Seifert, Peter R., to Daimler-Benz Aktiengesellschaft. Cooling arrangement for an internal combustion engine. 4,438,732, Cl. 123-41.050.

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Seligsohn, Scott; Bolgiano, Duane R.; and Seligsohn, Sherwin I., to International Mobile Machines Corp. Sound-activated code-controlled detection system for telephones and the like. 4,439,638, Cl. 179-84.00C.
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Senour, Walter H., to Amway Corporation. Wringable mop assembly. 4,438,540, Cl. 15-119.00A.
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Mactaggart, John W., 4,439,038, Cl. 356-408.000.
Sernaker, Howard, to Virginville Patents, Inc. Embroidered transfer and method of making same. 4,439,202, Cl. 8-471.000.
Serrianne, Russell A.; and Jennings, Roger L., to R. Jennings Manufacturing Company, Inc. Silk screen printing onto the front panel of a cap. 4,438,693, Cl. 101-129.000.
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, to Ayerst, McKenna & Harrison Inc. N-Naphthoylglycine derivatives. 4,439,617, Cl. 560-39.000.
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Yoshida, Kunio, 4,439,836, Cl. 364-900.000.
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Trimnell, Donald; and Shasha, Baruch S., 4,439,488, Cl. 428-402.240.
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Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., 4,439,156, Cl. 434-12.000.
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Shay, Lucas K.; and Wegner, Eugene H., to Phillips Petroleum Company. High methionine content *Pichia pastoris* yeasts. 4,439,525, Cl. 435-247.000.
Sheads, Richard E., to Union Carbide Corporation. One solvent process for preparation of esters of 3,5-dibromo-4-hydroxybenzonitrile. 4,439,368, Cl. 260-404.000.
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Rizaev, Ramiz G. K. O.; Mirataev, Mirabdulla M. O.; Sheinin, Viktor E.; Magerramova, Zemfira J. K.; Litvishkov, Jury N.; Gusein-Zade, Sekher G. K.; Farzullaev, Tofik S. O.; and Ilyasova, Nazaket M. K., 4,439,371, Cl. 260-465.00C.
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Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, 4,439,306, Cl. 208-11.00R.
Shell Oil Company: *See*—
DiFoggio, Rocco, 4,439,497, Cl. 428-539.500.
Kollmeyer, Willy D., 4,439,225, Cl. 71-88.000.
Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., 4,439,624, Cl. 568-470.000.
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., 4,438,754, Cl. 125-14.000.
Pilgram, Kurt H., 4,439,226, Cl. 71-92.000.
Soloway, Samuel B., 4,439,446, Cl. 424-304.000.
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Shepard, James J., Jr.: *See*—
Simpson, Charles H., 4,439,235, Cl. 75-101.00R.
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Du, Mila T.; and Shepherd, Robert G., 4,439,606, Cl. 544-356.000.
Sherwin-Williams Company, The: *See*—
Kindrick, Robert H., 4,439,572, Cl. 524-405.000.
Shibaj, Haruo: *See*—
Okamura, Masatoshi; and Shibaj, Haruo, 4,438,860, Cl. 220-4.00B.
Shields, Charles. Method and machine for preparing an end portion of a multi-conductor flat cable for receiving a connector thereon. 4,439,631, Cl. 174-74.00R.
Shifrin, Gordon A.: *See*—
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Segawa, Takashi, 4,439,172, Cl. 474-160.000.
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., to Institut Fiziki Akademii Nauk Belorusskoi SSR. Apparatus for high temperature treatment of rectilinear-generatrix surfaces of nonconductive products. 4,439,657, Cl. 219-121.0PR.
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Shimogawara, Jun: *See*—
Akamatsu, Yoshiyuki; and Shimogawara, Jun, 4,438,915, Cl. 271-9.000.
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Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, 4,439,560, Cl. 523-437.000.
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Hotta, Shu; Kishimoto, Yoshio; and Shimotsuma, Wataru, 4,439,569, Cl. 524-128.000.
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Shinogle, Ronald D.: *See*—
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, to Fuji Photo Film Co., Ltd. Light-sensitive ethylenically unsaturated materials containing benzanthrones and novel sensitizers. 4,439,515, Cl. 430-285.000.
Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, to Sony Corporation. Rear projection apparatus. 4,439,027, Cl. 353-77.000.
Shiozaki, Tomoharu: *See*—
Irii, Shinsuke; and Shiozaki, Tomoharu, 4,439,581, Cl. 524-839.000.
Shipai, Andrei K.: *See*—
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Cernigliaro, George J.; and Shipley, Charles R., 4,439,516, Cl. 430-323.000.
Shipley Company Inc.: *See*—
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Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, to Hitachi, Ltd.; and Hitachi Metals, Ltd. Magnetic head. 4,439,794, Cl. 360-127.000.
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Shiue, Chyng-Yann; and Wolf, Alfred P., to United States of America, Energy. 1-^{11}C-D-Glucose and related compounds. 4,439,414, Cl. 424-1.100.
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Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., 4,439,422, Cl. 424-92.000.
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Murakami, Katsuo; Shoda, Isao; Kodama, Hitoshi; Orikasa, Shoji; and Ito, Hiroshi, 4,439,711, Cl. 313-487.000.
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Asada, Eiichi; Inokuma, Toshio; and Saito, Hiroyuku, 4,439,352, Cl. 252-518.000.
Shores, Paul W.: *See*—
Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, 4,439,766, Cl. 343-9.00R.
Showa Manufacturing Co., Ltd.: *See*—
Matsumoto, Fumio, 4,438,909, Cl. 267-64.260.
Terada, Makato, 4,438,908, Cl. 267-8.00R.
Shubkin, Ronald L.: *See*—
Burton, Lester P. J.; and Shubkin, Ronald L., 4,439,374, Cl. 260-512.00R.
Shur-Lok International SA: *See*—
Dessouroux, Alexis A. J. F., 4,439,078, Cl. 411-178.000.
Siemens AG: *See*—
Beier, Helmut, 4,439,652, Cl. 200-148.00A.
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Adelski, Hans-Joachim; and Pflaugner, Josef, 4,439,704, Cl. 310-211.000.
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,439,287, Cl. 204-58.000.
Brajder, Antonio, 4,439,806, Cl. 361-98.000.
Claussen, Ulf, 4,439,729, Cl. 324-165.000.
Fritz, Otmar, 4,438,847, Cl. 206-330.000.
Mair, Eduard, 4,439,144, Cl. 432-59.000.
Plies, Erich, 4,439,685, Cl. 250-398.000.
Winzer, Gerhard, 4,439,005, Cl. 350-96.150.
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Mueller-Schloer, Christian, 4,438,824, Cl. 178-22.080.
Sievers, George K., to Sievers, George Kelly. Method for forming ternary alloys using precious metals and interdispersed phase. 4,439,470, Cl. 427-252.000.

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Beekmans, Jan J. P. M.; and Hughes, John B., 4,439,692, Cl. 307-297.000.
Silander, Keijo. Arrangement of fittings for flats in a carding machine. 4,438,549, Cl. 19-107.000.
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Dahlgren, William V., Jr.; and Silverstein, Lewis S., 4,439,834, Cl. 364-474.000.
Simich, Emil, to A. J. Gerrard & Co. Material baling device. 4,438,689, Cl. 100-25.000.
Simonds, Gary, to Kidde Recreation Products, Inc. Compound bow. 4,438,753, Cl. 124-24.00R.
Simpson, Charles H., to Shepard, James J., Jr. Chlorination process for removing precious metals from ore. 4,439,235, Cl. 75-101.00R.
Sinclair, Paul L., to Schlumberger Technical Corporation. Digital induction logging system including autocalibration. 4,439,831, Cl. 364-422.000.
Sinclair, Ronald R.: *See*—
Sands, Timothy B.; and Sinclair, Ronald R., 4,438,893, Cl. 244-3.210.
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Dunn, William H.; Edwards, William J.; and Minalga, Philip F., 4,438,715, Cl. 112-158.00B.
Minnich, George E., 4,439,716, Cl. 318-632.000.
Singh, Balwant; Chang, Laurence W.; and Forgione, Peter S., to American Cyanamid Company. Tertiary aralkyl urethanes and isocyanates derived therefrom. 4,439,616, Cl. 560-25.000.
Singh, Gurvinder P.; and Jolly, William D., to Victor Equipment Company; and ESAB North America, Inc. Automated cutting of plate steel. 4,439,249, Cl. 148-9.00R.
Sinha, Rabindra K., to Calgon Corporation. Use of anionic or cationic polymers to lower the electrical resistivity of fly ash. 4,439,351, Cl. 252-500.000.
Sirtori, Cesare: *See*—
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Skarbek, Louis: *See*—
Calandrello, Nick; Dimodana, Robert; Skarbek, Louis; Gove, Don; Cooper, Edwin; and McKenzie, John, 4,439,647, Cl. 200-5.00A.
Skega AB: *See*—
Berggren, Per-Olov, 4,439,120, Cl. 418-77.000.
SKF Industrial Trading & Development Company B.V.: *See*—
Kapaan, Hendrikus J., 4,438,987, Cl. 308-10.000.
Schalk, Bartje; Operti, Claudio; and Bras, Johan C., 4,438,990, Cl. 308-187.100.
SKF Kugellagerfabriken GmbH: *See*—
Negele, Richard; and Birkenmaier, Wilhelm, 4,438,989, Cl. 308-184.00R.
Olschewski, Armin; Kispert, Klaus; and Meining, Hans, 4,438,992, Cl. 308-201.000.
SKF Nova AB: *See*—
Lundgren, Bengt, 4,438,991, Cl. 308-189.00R.
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Santen, Sven; and Edstrom, John O., 4,439,410, Cl. 423-350.000.
Skinner, Robert T. J.; and Tumber, Brian W., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,438,747, Cl. 123-450.000.
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Piegay, Yves, 4,438,946, Cl. 280-602.000.
Slatton, B. Dale, to Kettelson, Ernest, a part interest. Insect exterminating device. 4,438,585, Cl. 43-113.000.
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Lewis, Robert M.; Ryan, Robert C.; and Slaugh, Lynn H., 4,439,624, Cl. 568-470.000.
Slavin, Martin J., to Intech Systems Corp. Differential stethoscope. 4,438,772, Cl. 128-715.000.
Sledesky, Stephen M.: *See*—
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Slee, Roger H., to Brico Engineering Limited. Valve seat inserts for internal combustion engines. 4,438,740, Cl. 123-188.00S.
Small, Irwin A. Method of jawbone abutment implant for dental prostheses and implant device. 4,439,152, Cl. 433-173.000.
Smirmaul, Heinz J. Variable circular dual image corneal radius measurement instrument. 4,439,025, Cl. 351-212.000.
Smith, Geoffrey M.: *See*—
Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., 4,439,823, Cl. 363-161.000.
Smith, Hal W., Jr.: *See*—
Smith, Michael C.; and Smith, Hal W., Jr., 4,438,880, Cl. 228-1.00A.
Smith, Harry D., Jr.; and Arnold, Dan M., to Texaco Inc. Natural gamma ray logging with borehole effect compensation. 4,439,676, Cl. 250-256.000.
Smith International, Inc.: *See*—
Garner, Claude R.; and Neilson, William J., 4,438,934, Cl. 277-92.000.
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Cooper, David G.; and Sach, George S., 4,439,609, Cl. 546-334.000.
Ganellin, Charon R.; Ife, Robert J.; and Owen, David A. A., 4,439,435, Cl. 424-251.000.
Jones, Martin; and Young, Rodney C., 4,439,437, Cl. 424-263.000.
Smith Laboratories, Inc.: *See*—
Smith, William S., 4,439,423, Cl. 424-94.000.
Smith, Michael C.; and Smith, Hal W., Jr., to Orthodyne Electronics Corporation. Ultrasonic wire bond touchdown sensor. 4,438,880, Cl. 228-1.00A.
Smith, Samuel W.; and McVey, Harold C., to Blue Grass Industries, Inc. Radius blade cutting apparatus for a sewing machine. 4,438,714, Cl. 112-130.000.
Smith, William S., to Smith Laboratories, Inc. Chymopapain and method for its use. 4,439,423, Cl. 424-94.000.
Smolin, William; and Estes, John H., to Texaco Inc. Zeolite adsorbent for separation of para-xylene. 4,439,535, Cl. 502-62.000.
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Georges, Jean-Claude, 4,439,720, Cl. 322-4.000.
Societe d "Expansion Scientifique "Expansia": *See*—
Aspisi, Christian; Calas, Bernard; Daunis, Jacques; Follet, Michel; Jacquier, Robert; and Parello, Joseph, 4,439,545, Cl. 521-32.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See*—
Raboud, Pierre-Benoit; Kubicek, Frantisek; and Bandi, Jean-Pierre, 4,438,681, Cl. 99-323.200.
Societe de Telecommunications Electronique Aeronautique et Maritime T.E.A.M.: *See*—
Bouvrande, Andre M., 4,439,646, Cl. 200-5.00A.
Societe d'Etudes et Applications Techniques S E A T: *See*—
Amberny, Philippe; and de Mendez, Michel O., 4,439,674, Cl. 250-227.000.
Societe Metallurgique de Gerzat: *See*—
Develay, Roger; and Anagnostidis, Marc, 4,439,246, Cl. 148-2.000.
Soejima, Munenori: *See*—
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.
Soft Sheen Products, Inc.: *See*—
Bernstein, Joel E., 4,439,427, Cl. 424-199.000.
Sohn, Frank M., to RCA Corporation. Color picture tube having improved temperature compensating support for a mask-frame assembly. 4,439,709, Cl. 313-406.000.
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Pakebusch, Bernd; Carstensen, Carsten A.; Sojka, Bernward; and Lange, Hans, 4,439,527, Cl. 436-135.000.
Sokaris, Jerry G.: *See*—
Johnson, Cary P.; and Sokaris, Jerry G., 4,439,481, Cl. 428-235.000.
Solberg, Per I., to Stord Bartz A/S. Screw press arrangements. 4,438,691, Cl. 100-117.000.
Solek, Leszek, to Commander Electrical Materials, Inc. Electrical junction and outlet box. 4,438,859, Cl. 220-3.200.
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Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.
Solomon, Yeheskel. Wrench. 4,438,668, Cl. 81-352.000.
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Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,759, Cl. 340-703.000.
Fleming, James R.; Frezza, William A.; and Soloway, Gerald S., 4,439,761, Cl. 340-735.000.
Soloway, Samuel B., to Shell Oil Company. Fluorine-containing oxyiminocyclopropanecarboxylates. 4,439,446, Cl. 424-304.000.
Soltis, Daniel G.: *See*—
Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., 4,439,465, Cl. 427-115.000.
Sommers, Hans: *See*—
Altemark, Detlef; Sommers, Hans; and Weid, Manfred, 4,439,135, Cl. 431-2.000.
Sondermeyer, Jack C., to Peavey Electronics Corp. Circuit for simulating vacuum tube compression in transistor amplifiers. 4,439,742, Cl. 330-262.000.
Sonoco Products Company: *See*—
Roper, Linwood W., Jr., 4,439,071, Cl. 405-216.000.
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, to Toray Industries, Inc. Polymethyl methacrylate membrane. 4,439,322, Cl. 210-500.200.
Sony Corporation: *See*—
Mogi, Takao; Morita, Kouji; and Matsunaga, Osamu, 4,439,787, Cl. 358-195.100.
Nakamura, Takashi; and Morioka, Yoshihiro, 4,439,713, Cl. 315-370.000.
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Schwarz, Manfred; and Higuchi, Tadashi, 4,439,743, Cl. 330-267.000.
Shioda, Takizo; Ito, Norio; and Horiuchi, Hiroshi, 4,439,027, Cl. 353-77.000.
Sugita, Kazuhiro, 4,439,146, Cl. 432-253.000.
Yokoya, Satoshi, 4,439,696, Cl. 307-494.000.
Sorensen, Soren N.: *See*—
Petersen, Hans C.; and Sorensen, Soren N., 4,439,119, Cl. 418-61.00B.
Souriau et Cie: *See*—
Amberny, Philippe; and de Mendez, Michel O., 4,439,674, Cl. 250-227.000.
Sovak, Milos; and Ranganathan, Ramachandran, to University of California, The Regents of the. Novel amino-dioxepane intermediates for

the synthesis of new non-ionic contrast media. 4,439,613, Cl. 549-347.000.

Space Structures International Corp.: *See*—
Wendel, Wendel R., 4,438,615, Cl. 52-648.000.

Spears, Lonnie K.: *See*—
Davis, James W.; Larson, Bradley W.; Kockler, Barry C.; Noonan, Daniel T.; Moreland, N. Flynt; and Spears, Lonnie K., 4,439,036, Cl. 355-75.000.

Spectron Development Laboratories, Inc.: *See*—
Doty, James L., 4,439,010, Cl. 350-174.000.

Spencer, William R., to General Electric Company. Maximum pressure selector device. 4,438,778, Cl. 137-112.000.

Sperry Corporation: *See*—
Priepke, Edward H.; and McAllister, Ronald L., 4,439,218, Cl. 55-288.000.
Quermann, Thomas R., 4,438,655, Cl. 74-5.00F.
Weight, Merle E.; and Swenson, Theodore S., 4,439,809, Cl. 361-220.000.

Spicer, Glaenzer: *See*—
Orain, Michel, 4,439,168, Cl. 464-69.000.

Spierings, Gijsbertus A. C. M.: *See*—
Joormann, Hendrik J. M.; and Spierings, Gijsbertus A. C. M., 4,439,008, Cl. 350-96.310.

Spooner, Archer M.: *See*—
Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., 4,439,157, Cl. 434-40.000.

Spotzl, Markus; Drosen, Erich; Pongratz, Leonhard; and Kotai, Ferenc, to Krauss-Maffei Aktiengesellschaft. Munition-supply system for an armored vehicle weapon. 4,438,677, Cl. 89-36.00K.

Sprague Electric Company: *See*—
Gontowski, Walter S., Jr., 4,439,673, Cl. 250-214.00A.

Sprague, Gale. Soil compactor drive assembly. 4,439,057, Cl. 404-133.000.

Spraying Systems Company: *See*—
O'Brien, Edward J.; Paulsen, Gary A.; and Filicicchia, Daniel J., 4,438,884, Cl. 239-600.000.

SRI International: *See*—
Dawson, Marcia I.; Chan, Rebecca; and Hobbs, Peter D., 4,439,614, Cl. 560-8.000.

SRO Kugellagerwerke J. Schmid-Roost AG: *See*—
Borel, Denis, 4,438,985, Cl. 308-6.00C.

Stabilus GmbH: *See*—
Schafer, Willi, 4,438,833, Cl. 188-320.000.

Stacey, Eric J.: *See*—
Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., 4,439,823, Cl. 363-161.000.

Stacy, Robert A.; and Rice, Robert R., to McDonnell Douglas Corporation. Low voltage electro-optic modulator. 4,439,014, Cl. 350-388.000.

Stafsudd, Oscar M.: *See*—
Gentile, Anthony L.; Bowers, John L.; and Stafsudd, Oscar M., 4,439,266, Cl. 156-614.000.

Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive mixture based on O-naphthoquinone diazide ester of condensate of bisphenol and formaldehyde and light-sensitive copying material prepared therefrom. 4,439,511, Cl. 430-165.000.

Stain, Donald B.: *See*—
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., 4,439,405, Cl. 423-10.000.

Stallningsgruppen i Goteborg Aktiebolag: *See*—
Wallther, Harry, 4,439,052, Cl. 403-49.000.

Stamberg, Jiri: *See*—
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.

Standard Oil Company, The: *See*—
Bonny, Alan, 4,439,542, Cl. 502-207.000.

Standley, Charles L.: *See*—
Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, 4,439,270, Cl. 156-644.000.

Stanek, Jaroslav: *See*—
Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, 4,439,425, Cl. 424-177.000.

Stanley Aviation Corporation: *See*—
Valentine, Gordon A., 4,438,959, Cl. 285-340.000.

Stape, William J.: *See*—
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., 4,439,000, Cl. 339-176.0MP.

Starr, James B., to Honeywell Inc. Semiconductor pressure transducer. 4,439,752, Cl. 338-2.000.

State of South Australia: *See*—
O'Sullivan, Brendan W.; Leggett, Leo J.; and Melvin, Maxwell V., 4,438,725, Cl. 119-4.000.

Stauffer Chemical Company: *See*—
Green, Laddie L., 4,439,227, Cl. 71-95.000.
Im Han, Kyoung R., 4,439,538, Cl. 502-105.000.
Nagubandi, Sreeramulu, 4,439,373, Cl. 260-502.50F.

Stearns, Chris, to C. K. Locks Limited. Locking device for vehicles equipped with sliding windows. 4,438,965, Cl. 292-256.750.

Steck, Werner; Rudolf, Peter; Sarnecki, Wilhelm; Loeser, Werner; Kovacs, Jenoe; and Jakusch, Helmut, to BASF Aktiengesellschaft. Preparation of acicular ferromagnetic metal particles consisting essentially of iron. 4,439,231, Cl. 75-0.5AA.

Steelcase Inc.: *See*—
Knoblauch, Jack R.; Beukema, Duane M.; and Hozeski, Kenneth W., 4,438,898, Cl. 248-561.000.

Stefanov, Stefan R.: *See*—
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.

Stein Industrie: *See*—
Bobichon, Jacques; and Leroy, Pierre-Loup, 4,438,784, Cl. 138-92.000.
Delaplace, Lucien; and Robert, Jacques, 4,438,707, Cl. 110-264.000.

Steiner, Alois, to Ruti Machinery Works Ltd. Apparatus for guiding a fluid medium driven weft thread in the shed of a loom and use of the apparatus at a multiple longitudinal traversing shed loom. 4,438,790, Cl. 139-435.000.

Stengle, Rolf; and Grupp, Rolf, to Krauss u. Reichert GmbH & Co.; and KG Spezialmaschinenfabrik. Cloth laying machine. 4,438,914, Cl. 270-31.000.

Stenograph Corporation: *See*—
Chvojcsek, Frank, 4,439,798, Cl. 360-4.000.

Stephens, Donald L., to PACCAR Inc. Cab pitch restraint. 4,438,825, Cl. 180-89.120.

Stephens, Raymond A., to Valeron Corporation, The. Actuator for generating tool head. 4,438,539, Cl. 10-120.50R.

Stephenson, Martin: *See*—
Mattei, Frank V.; Stephenson, Martin; Gordon, Allin K.; and Doddi, Namassivaya, 4,439,420, Cl. 424-78.000.

Sterling Drug Inc.: *See*—
Wentland, Mark P.; and Bailey, Denis M., 4,439,436, Cl. 424-258.000.

Steuer, Herbert K., to P.I.V. Antrieb Werner Reimers, GmbH & Co. KG. Infinitely variable cone pulley transmission. 4,439,170, Cl. 474-28.000.

Stevenson, David W., to Motorola, Inc. Low cost electro-optical connector. 4,439,006, Cl. 350-96.200.

Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Method of capturing sulfur. 4,439,406, Cl. 423-244.000.

Stewart, Thomas L.: *See*—
Nanny, Walter C.; Stewart, Thomas L.; and Hemphill, Dean P., 4,438,754, Cl. 125-14.000.

Stichting Centraal Laboratorium Van De Bloedtransfusiedienst Van Het Nederlandse Rode Kruis: *See*—
Leurink, Hendrik J., 4,439,192, Cl. 604-408.000.

Stingelin, Willy; and Loew, Peter, to Ciba-Geigy Corporation. Dye salts. 4,439,204, Cl. 8-497.000.

Stinton, Robert T.: *See*—
Long, Richard W.; and Stinton, Robert T., 4,438,531, Cl. 2-2.10R.

Stirling Thermal Motors, Inc.: *See*—
Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, 4,439,169, Cl. 464-170.000.

Stoger, Klaus: *See*—
Birkle, Siegfried; Stoger, Klaus; and De Vries, Hans, 4,439,287, Cl. 204-58.000.

Stone, Orison W., to Pack Image, Inc. Package for protecting a generally rectangular parallelpiped article. 4,438,849, Cl. 206-592.000.

Stoneleigh Trust, The: *See*—
Massa, Frank, 4,439,847, Cl. 367-151.000.

Stoppani, Brian R.; Box, Nigel J.; and Phillips, David D., to Mining Supplies Limited. Conveyor drive gear box. 4,438,837, Cl. 198-735.000.

Stord Bartz A/S: *See*—
Solberg, Per I., 4,438,691, Cl. 100-117.000.

Stouffer Corporation, The: *See*—
Peleg, Yigal, 4,439,656, Cl. 219-10.55E.

Stout, Mark E., to Honeywell Inc. Energy saving boiler purge sequence control. 4,439,140, Cl. 431-31.000.

Strachan, Robert G.: *See*—
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.

Strassman, Richard J., to Badger Die Casting Corp. Aluminum furnace and preheater therefor. 4,439,145, Cl. 432-164.000.

Stricklen, Phil M.: *See*—
McDaniel, Max P.; and Stricklen, Phil M., 4,439,543, Cl. 502-228.000.

Stride Rite International, Ltd.: *See*—
McBarron, George P., 4,438,573, Cl. 36-3.00B.

Stringer, Frederick D.: *See*—
Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., 4,439,478, Cl. 428-137.000.

Strother, Greene W., Jr., to Dow Chemical Company, The. Casting slip made from spinel and spinel refractories. 4,439,532, Cl. 501-117.000.

Strzegowski, Joseph C., Jr.: *See*—
Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., 4,439,263, Cl. 156-497.000.

Studhalter, Walter R.: *See*—
Hays, Lance G.; Studhalter, Walter R.; and Ritzi, Emil W., 4,438,638, Cl. 62-500.000.

Stull, Morton. Captive dispensing cap construction. 4,438,870, Cl. 222-48.000.

Stultz, Edward B.: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,439,663, Cl. 219-121.0LK.

Stulz, Lawrence W.: *See*—
Coldren, Larry A.; and Stulz, Lawrence W., 4,439,268, Cl. 156-626.000.

Sturm, Ruger & Company, Inc.: *See*—
Ruger, William B., 4,438,678, Cl. 89-138.000.

Stylianou, Andreas S. Cassette box construction. 4,438,846, Cl. 206-387.000.

Sublett, Bobby J.; and Hilbert, Samuel D., to Eastman Kodak Company. Modified poly(tetramethylene terephthalate). 4,439,598, Cl. 528-295.300.

Suckow, David S., to Caterpillar Tractor Co. Seal for a multipiece wheel assembly. 4,438,797, Cl. 152-410.000.

Suda, Kataro, to Suda Kinzoku Seisakusho Co., Ltd. Toy for steering a simulated car. 4,438,922, Cl. 273-1.0GA.

Suda Kinzoku Seisakusho Co., Ltd.: *See*—
Suda, Kataro, 4,438,922, Cl. 273-1.0GA.

Sadbury, John D.; and Zielke, Clyde W., to Conoco Inc. Process for beneficiating high sulfur, high fluidity coal. 4,439,304, Cl. 208-8.0LE.

Sueda, Keizi: *See*—
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,439,222, Cl. 65-99.200.

Suehiro, Keigo: *See*—
Inoue, Takeo; Otsu, Jun; Sasaki, Tateyo; Doi, Hiroyuki; and Suehiro, Keigo, 4,439,567, Cl. 524-108.000.

Sumatsu, Masakazu, to Teijin Limited. Pressure-sensitive adhesive tape. 4,439,482, Cl. 428-252.000.

Sugimori, Shigeru: *See*—
Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, 4,439,340, Cl. 252-299.630.

Sugita, Kazuhiro, to Sony Corporation. Heat treatment apparatus. 4,439,146, Cl. 432-253.000.

Sugiura, Hiroaki: *See*—
Saito, Tadao; Akutsu, Masao; Sagiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.

Suierveld, John: *See*—
Powell, Jimmie L.; Standley, Charles L.; and Suierveld, John, 4,439,270, Cl. 156-644.000.

Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., to Burroughs Corporation. Endorsing apparatus utilizing holding force pressure. 4,438,698, Cl. 101-287.000.

Sullivan, Raymond B. Fishing lure. 4,438,583, Cl. 43-42.060.

Sumitomo Chemical Company, Limited: *See*—
Harada, Naoki; and Abeta, Sadaharu, 4,439,205, Cl. 8-527.000.

Sumitomo Metal Mining Company Limited: *See*—
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.

Summa, Gareth, to Summa-Rise. Bucket attachment for tractors. 4,439,088, Cl. 414-703.000.

Summa-Rise: *See*—
Summa, Gareth, 4,439,088, Cl. 414-703.000.

Sun, Lilla S.; and Anderson, John C., to Beckman Instruments, Inc. Photometric accuracy and linearity test solution. 4,439,347, Cl. 252-408.100.

Suncom, Incorporated: *See*—
Cecchi, Marino, 4,439,649, Cl. 200-6.00A.

Suovaniemi, Osmo A., to Eflab Oy. Photometer. 4,439,039, Cl. 356-416.000.

Suzuki, Hiroaki: *See*—
Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, 4,439,697, Cl. 307-530.000.

Suzuki, Hiroshi: *See*—
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,742, Cl. 123-308.000.
Namba, Yuzuru; and Aoyagi, Kenichi, 4,438,743, Cl. 123-308.000.

Suzuki, Kenji: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.

Suzuki, Minoru: *See*—
Kandachi, Takayoshi; Sueda, Keizi; and Suzuki, Minoru, 4,439,222, Cl. 65-99.200.

Suzuki, Tomio; and Morimoto, Kotaro, to Kobe Steel, Limited. Method and apparatus for combustion with a minimum of NOx emission. 4,439,137, Cl. 431-8.000.

Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Sense amplifier circuit. 4,439,697, Cl. 307-530.000.

Sviridov, Jury B.; Andreev, Alexandr M.; Kozlovsky, Vadim V.; Lukin, Alexandr M.; and Novikov, Evgeny V., to Nauchno Proizvodstvennoe Obiedinenie Po Toplivnoi Apparature Dvigatelei. Device for fuel delivery to internal combustion engine with vaporization of injected fuel. 4,438,750, Cl. 123-557.000.

Svrcek, William Y.: *See*—
Behie, Leo A.; Berk, Dimitrios; Bishnoi, P. Raj; and Svrcek, William Y., 4,439,412, Cl. 423-573.00G.

Swanson, David; and Edgren, David, to Alza Corporation. Theophylline therapy. 4,439,195, Cl. 604-890.000.

Swartley, John S. Convection food heating. 4,439,459, Cl. 426-438.000.

Swarup, Rajeshwar, to Occidental Chemical Corporation. Method for repairing perfluorinated polymeric microporous electrolytic cell separators by heat sealing. 4,439,296, Cl. 204-253.000.

Sweeney, Paul L., Jr.: *See*—
Letterio, Fred, 4,438,773, Cl. 128-748.000.

Swenson, Robert M.; Shockman, Gerald D.; Eisenstein, Toby K.; and Carey, Roberta B., to Research Corporation. Group B Streptococcus antigens and vaccines. 4,439,422, Cl. 424-92.000.

Swenson, Theodore S.: *See*—
Weight, Merle E.; and Swenson, Theodore S., 4,439,809, Cl. 361-220.000.

Swiatosz, Edmund, to United States of America, Navy. Smoke generator for use with water and smoke generant. 4,439,341, Cl. 252-305.000.

Swithenbank, Colin, to Rohm and Haas Company. Substituted phthalimides herbicides. 4,439,229, Cl. 71-96.000.

Sylvia, Frank, to Pace Incorporated. Desoldering device and improved heater assembly therefor. 4,439,667, Cl. 219-230.000.

SYNTEX (U.S.A.) Inc.: *See*—
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.

Syva Company: *See*—
Khanna, Pyare; and Colvin, Warren, 4,439,356, Cl. 260-112.00R.

Sze, Morgan C.: *See*—
Schindler, Harvey D.; and Sze, Morgan C., 4,439,313, Cl. 208-251.00H.

Szikora, Bela: *See*—
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Szirmai, Endre: *See*—
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.

Szymski, Eugene J., to Schwinn Bicycle Company. Calibration of load indicator for ergometric exerciser. 4,438,921, Cl. 272-73.000.

Tabor, Harry Z., to Scientific Research Foundation, The. Pipe coupling. 4,438,952, Cl. 285-39.000.

Tabuchi, Takahisa: *See*—
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; Soejima, Munenori; and Miyauchi, Tetsuya, 4,439,099, Cl. 414-45.000.

Tachino, Ichiro: *See*—
Shimoyama, Yoshiaki; Tachino, Ichiro; and Koga, Shigenobu, 4,439,251, Cl. 148-31.550.

Taguchi, Kiyomi: *See*—
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Tagusagawa, Atsushi: *See*—
Hayashi, Masaru; Tagusagawa, Atsushi; Komatsu, Fumiaki; Sawada, Yoshihisa; and Sakaki, Yorihisa, 4,439,318, Cl. 210-208.000.

Tahara, Tamotsu: *See*—
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

Tajika, Fumitaka: *See*—
Matsuoka, Youichi; and Tajika, Fumitaka, 4,439,706, Cl. 310-353.000.

Tajima, Hidemi, to Hoya Corporation. Optical glass. 4,439,530, Cl. 501-45.000.

Takahara, Ichiro; and Yabu, Tadahiko, to Sanyo Electric Co., Ltd. Record player. 4,439,850, Cl. 369-77.200.

Takahashi, Keietsu: *See*—
Hayashi, Miki; Takahashi, Keietsu; and Hazue, Masaaki, 4,439,413, Cl. 424-1.100.

Takahashi, Toshikatsu: *See*—
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, 4,439,456, Cl. 426-276.000.

Takahashi, Toshio: *See*—
Arita, Kishio; Takahashi, Toshio; Miyoshi, Akio; Izumimori, Hajime; and Ishida, Mitsushi, 4,439,247, Cl. 148-2.000.

Takamatsu, Ryoichi, to Nippon Electric Co., Ltd. Memory device. 4,439,843, Cl. 365-218.000.

Takamisawa Electric Co., Ltd.: *See*—
Fujii, Kunihisa; Tomono, Noboru; and Shikano, Yukio, 4,439,750, Cl. 335-274.000.

Takano, Ikuo: *See*—
Umino, Hiroshi; and Takano, Ikuo, 4,439,653, Cl. 200-153.0SC.

Takashina, Naomitsu; Shimoi, Masahiro; and Iwamoto, Yoshinori, to Mitsubishi Gas Chemical Company, Inc. Coating composition. 4,439,560, Cl. 523-437.000.

Takatsuki, Yukio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Takaya, Tadashi, to Murata Manufacturing Co., Ltd. Piezoelectric loudspeaker. 4,439,640, Cl. 179-110.00A.

Takeda, Yasuhiko: *See*—
Kitajima, Soichi; Iwamura, Kazuyuki; and Takeda, Yasuhiko, 4,438,759, Cl. 126-433.000.

Takemura, Shuji; Kawano, Yoshihiko; and Hirakawa, Kazumi, to Honshu Seishi Kabushiki Kaisha. Electric discharge recording materials. 4,439,485, Cl. 428-323.000.

Takenaka, Shigenori: *See*—
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Takeuchi, Hidemaro; Matsumura, Shogo; Hidaka, Ryoichi; Ikehara, Yasunobu; and Saeki, Tsuyoshi, to Nippon Steel Corporation. Continuous casting of steel slabs and blooms free from surface defects. 4,438,803, Cl. 164-472.000.

Takeuchi, Naoki: *See*—
Sano, Tsutomu; Takeuchi, Naoki; and Kurumaji, Masanobu, 4,439,123, Cl. 425-112.000.

Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Taki, Yoshihiro; Akado, Hajime; Fukuta, Toshiaki; and Miyakawa, Susumu, to Nippondenso Co., Ltd. Filter means. 4,439,321, Cl. 210-493.100.

Takino, Shigekatsu: *See*—
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, 4,438,701, Cl. 104-172.00B.

Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, to Toyo Stauffer Chemical Co., Ltd. Catalytic component for polymerization of α-olefin and method for homo- or co-polymerization of α-olefin. 4,439,539, Cl. 502-112.000.

Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, to Toyo Stauffer Chemical Co., Ltd. Catalytic component for polymerization of α-olefin and method for homo- or co-polymerization of α-olefin. 4,439,541, Cl. 502-125.000.

Takushima, Takashi: *See*—
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, 4,438,580, Cl. 40-590.000.

Tamagawa, Shigehisa; Fuchizawa, Tetsuro; and Ono, Minoru, to Fuji Photo Film Co., Ltd. Water-proof photographic support. 4,439,496, Cl. 428-513.000.

Tamosauskas, Albert E.; and Temple, Chester S., to PPG Industries, Inc. Aqueous peroxide emulsion for use with glass fibers. 4,439,558, Cl. 523-217.000.

Tamura, Takeo: *See*—
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.

Tamura, Teizo: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Tanaka, Kazuyoshi: *See*—
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.

Tanaka, Yoshitaka: *See*—
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Tandberg Data A/S: *See*—
Rudi, Guttorm, 4,438,879, Cl. 226-188.000.

Tarcsay, Lajos; Kamber, Bruno; Stanek, Jaroslav; Baschang, Gerhard; and Hartmann, Albert, to Ciba-Geigy Corporation. Peptide derivatives. 4,439,425, Cl. 424-177.000.

Targett, Ralph C.: *See*—
McIlroy, Malcolm B.; and Targett, Ralph C., 4,439,679, Cl. 250-282.000.

Tarkett AB: *See*—
Sachs, Peter R.; and Sears, James W., 4,439,480, Cl. 428-161.000.

Tarleton, George K., to GTE Automatic Electric Labs Inc. Low voltage protection circuit. 4,439,805, Cl. 361-92.000.

Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, to Konishiroku Photo Industry Co., Ltd. Method for transferring and fixing a toner image. 4,439,462, Cl. 427-14.100.

Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Doryokuro Kakunenryo Kaihatsu Jigyodan. Nuclear fuel conversion systems. 4,439,402, Cl. 422-159.000.

Tateno, Haruo, to Rikagaku Kenkyusho. Method of operating a plasma generating apparatus. 4,439,662, Cl. 219-121.0PY.

Tatevosian, Ruben A.: *See*—
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Taylor, Malcolm F., to Marconi Company Limited, The. Apparatus for accurately moving a body in accordance with a predetermined motion. 4,439,715, Cl. 318-627.000.

Tazaki, Kichiya: *See*—
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, 4,439,492, Cl. 428-409.000.

TDK Electronics Co., Ltd.: *See*—
Okamura, Masatoshi; and Shibaj, Haruo, 4,438,860, Cl. 220-4.00B.

Technicare Corporation: *See*—
Hinshaw, Waldo S.; and Gauss, Robert C., 4,439,733, Cl. 324-322.000.

Teijin Limited: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.
Suematsu, Masakazu, 4,439,482, Cl. 428-252.000.

Telefonaktiebolaget L M Ericsson: *See*—
Johansson, Jan H., 4,439,802, Cl. 361-56.000.

Temple, Chester S.: *See*—
Tamosauskas, Albert E.; and Temple, Chester S., 4,439,558, Cl. 523-217.000.

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Boles, Jeffrey L.; and Jones, Thomas M., 4,439,223, Cl. 71-30.000.

Terada, Makato, to Showa Manufacturing Co., Ltd. Spring receiving structure for hydraulic shock absorber. 4,438,908, Cl. 267-8.00R.

Terada, Osamu: *See*—
Kimura, Narito; Taguchi, Kiyomi; Hammyo, Masayuki; Terada, Osamu; Hasegawa, Teruyuki; Nimura, Youichi; and Hiraga, Noriyuki, 4,438,907, Cl. 266-217.000.

Teramachi, Hiroshi. Ball screw assembly containing a ball spline unit for exact slow feed and power transmission mechanism comprising said ball screw assembly. 4,438,986, Cl. 308-6.00R.

Terano, Minoru: *See*—
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Teraoka, Masanori: *See*—
Matsumoto, Seiji; Teraoka, Masanori; and Komaki, Takao, 4,439,682, Cl. 250-327.200.

Terasaki, Syuuzi: *See*—
Sasaki, Tohru; Ohta, Mutsuru; Terasaki, Syuuzi; and Kakizaki, Shozo, 4,439,811, Cl. 361-313.000.

Tereschenko, Lev A.: *See*—
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Terradyne Limited: *See*—
Roe, Jonas L., 4,438,575, Cl. 37-4.000.

Terry, Michael B., to Mostek Corporation. Low loop current switch latch circuit. 4,439,637, Cl. 179-16.00F.

Tetra Pak Developpement Ltd.: *See*—
Cheever, Richard N., 4,439,686, Cl. 250-492.300.

Teuscher, Leon A.: *See*—
Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., 4,439,507, Cl. 430-058.000.

Texaco Inc.: *See*—
Babic, Gary T., 4,439,612, Cl. 548-546.000.
Bousaid, Issam S., 4,438,814, Cl. 166-273.000.
Brennan, Michael E.; and Rice, Doris M., 4,439,546, Cl. 521-48.000.
Brennan, Michael E., 4,439,549, Cl. 521-131.000.
Brennan, Michael E., 4,439,550, Cl. 521-131.000.
Smith, Harry D., Jr.; and Arnold, Dan M., 4,439,676, Cl. 250-256.000.
Smolin, William; and Estes, John H., 4,439,535, Cl. 502-62.000.
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., 4,439,551, Cl. 521-131.000.

Texas Instruments Incorporated: *See*—
Allevato, Tony E., 4,439,244, Cl. 134-33.000.
Titus, Stephen D., 4,439,243, Cl. 134-33.000.
Wiggins, Richard H.; Doddington, George; and Cato, Craig J., 4,439,161, Cl. 434-201.000.

Tezuka, Toshiro: *See*—
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.

Thede, Ralph W. Boat loader. 4,439,086, Cl. 414-462.000.

Theeuwes, Felix, to ALZA Corporation. Parenteral agent dispensing equipment. 4,439,183, Cl. 604-85.000.

Theis, Peter F.; and Buchberger, Gregory, to Theis, Peter F. Message delivery system. 4,439,635, Cl. 179-6.200.

Theodorakis, Michael C.: *See*—
Brightman, Alan H., II; and Theodorakis, Michael C., 4,439,198, Cl. 604-894.000.

Thermo Electron Corporation: *See*—
Morgan, Dean T., 4,438,636, Cl. 62-325.000.

Thill, Fernand: *See*—
Schleimer, Francois; Henrion, Romain; Goedert, Ferdinand; and Thill, Fernand, 4,439,234, Cl. 75-52.000.

Thomas, David K.: *See*—
Parkins, David W.; Thomas, David K.; Pugsley, Peter C.; and Price, Benjamin J., 4,438,694, Cl. 101-152.000.

Thomas, Lowell S., to Dow Chemical Company, The. Carbonate polymers containing a salt of a crown complex as an ignition depressant. 4,439,566, Cl. 524-108.000.

Thomas, Norman W.: *See*—
McNew, George L.; and Thomas, Norman W., 4,438,593, Cl. 47-57.600.

Thompson, Gregory J.: *See*—
Lomas, David A.; and Thompson, Gregory J., 4,439,533, Cl. 502-6.000.

Thompson, Kenneth H. Mobile toy for kitten or similar animal. 4,438,727, Cl. 119-29.000.

Thomson-CSF: *See*—
Epsztein, Bernard, 4,439,746, Cl. 331-82.000.

Three Sisters Ranch Enterprises: *See*—
Bullock, Joseph J., III, 4,438,857, Cl. 215-256.000.

Thuries, Edmond; Nicoloso, Dante; and Pham Van, Doan, to Alsthom-Atlantique. Pressurized gas circuit-breaker having opening and closing resistors. 4,439,651, Cl. 200-144.0AP.

Tiegs, Paul E.: *See*—
Chamberlain, Joseph G.; and Tiegs, Paul E., 4,438,756, Cl. 126-131.000.

Tieh-Yin Fu, Frank: *See*—
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, 4,439,565, Cl. 524-103.000.

Timberlake, George A., Jr., to Air Products and Chemicals, Inc. Pressure relief alert. 4,438,792, Cl. 141-95.000.

Timberland Equipment Limited: *See*—
Paladino, Anthony, 4,438,710, Cl. 111-3.000.

Timm, Edward E.: *See*—
Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., 4,439,048, Cl. 374-34.000.

Timme, Albert C., Jr., to Hughes Tool Company. Tool joint bench mark. 4,438,953, Cl. 285-93.000.

Timofeev, Alexandr N.: *See*—
Korshunov, Evgeny A.; Ovodenko, Maxim B.; Kuznetsov, Alexandr N.; Kuzmin, Gennady G.; Kostrov, Valery P.; Timofeev, Alexandr N.; Meschaninova, Tatyana V.; and Bastrikov, Valery L., 4,438,802, Cl. 164-443.000.

Titov, Mikhail Y.: *See—*
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.

Titus, Stephen D., to Texas Instruments Incorporated. Apparatus and method of material removal with fluid flow within a slot. 4,439,243, Cl. 134-33.000.

Tkhai, Vitaly S.: *See—*
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.

TMC Corporation: *See—*
Gertsch, Ulrich, 4,438,948, Cl. 280-618.000.

Tobias, Michael A., to Mobil Oil Corporation. Acrylic modified anionic water dispersible styrene (meth)acrylonitrile copolymers. 4,439,495, Cl. 428-463.000.

Todo Seisakusho Ltd.: *See—*
Hamada, Shoichi, 4,438,553, Cl. 28-184.000.

Todorov, Ivan M.: *See—*
Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., 4,439,286, Cl. 204-54.00R.

Todorov, Ivan V.; Mircheva, Vera V.; Stefanov, Stefan R.; and Todorov, Ivan M., to Edinen Centar Po Chimia. Electrolyte for the deposition of bright tin coatings. 4,439,286, Cl. 204-54.00R.

Toho Beslon Co., Ltd.: *See—*
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.

Toho Titanium Co., Ltd.: *See—*
Murai, Atsushi; Terano, Minoru; Hitosugi, Yoshikazu; Kimura, Kouhei; Inoue, Masuo; and Miyoshi, Katsuyoshi, 4,439,537, Cl. 502-105.000.

Tokai Industrial Sewing Machine Co. Ltd.: *See—*
Kato, Takashi, 4,438,713, Cl. 112-100.000.

Tokunaga, Hiroshi: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Aiga, Toshiro; and Maeda, Toshiaki, 4,438,804, Cl. 164-522.000.
Kiguchi, Majime, 4,439,851, Cl. 369-77.200.
Komatsu, Shigeru; and Nakamura, Michio, 4,438,556, Cl. 29-576.00B.
Nabeshima, Daiki, 4,439,849, Cl. 369-50.000.
Suzuki, Yasoji; Suzuki, Hiroaki; and Saeki, Yukihiro, 4,439,697, Cl. 307-530.000.
Tarutani, Kohei; Tamura, Takeo; and Oshima, Hirofumi, 4,439,402, Cl. 422-159.000.
Umino, Hiroshi; and Takano, Ikuo, 4,439,653, Cl. 200-153.0SC.
Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, 4,439,797, Cl. 360-134.000.

Toma, Hitoshi; Kimura, Tomohiro; and Kondo, Hideyo, to Canon Kabushiki Kaisha. Method for covering with cylindrically shaped heat-shrinkable film. 4,439,258, Cl. 156-86.000.

Tomaiuolo, Francesco; and Capano, Michele, to Alfachimici S.p.A. Solution for stripping a layer of tin or tin-lead alloy from a substrate by means of a spraying operation. 4,439,338, Cl. 252-79.100.

Tomaszewski, Thaddeus W., to OMI International Corporation. Trivalent chromium electrolyte and process employing neodymium reducing agent. 4,439,285, Cl. 204-51.000.

Tomiyasu, Shizuo: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,539, Cl. 502-112.000.
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,541, Cl. 502-125.000.

Tomono, Makoto: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; Tokunaga, Hiroshi; Okamoto, Yukio; and Tomono, Makoto, 4,439,462, Cl. 427-14.100.

Tomono, Noboru: *See—*
Fujii, Kunihisa; Tomono, Noboru; and Shikano, Yukio, 4,439,750, Cl. 335-274.000.

Tomren, Douglas R.: *See—*
Hefley, Richard M.; Tomren, Douglas R.; and Jacoby, Jerold L., 4,439,767, Cl. 343-18.00E.

Tomson, James M., to General Electric Company. Apparatus and methods for assembling end shield assemblies for dynamoelectric machines. 4,438,839, Cl. 198-345.000.

Toohey, William J., to Jetline Engineering, Inc. Welding apparatus wherein physical contact of welding electrode with workpiece is mechanically sensed. 4,439,664, Cl. 219-124.020.

Toray Industries, Incorporated: *See—*
Kawamura, Hiroshi; and Mibae, Giro, 4,439,557, Cl. 523-216.000.
Sonoda, Takeshi; Tanaka, Yoshitaka; Takenaka, Shigenori; and Nogi, Tatsuo, 4,439,322, Cl. 210-500.200.

Torborg, Ralph H.: *See—*
Nelson, Lorne W.; and Torborg, Ralph H., 4,439,139, Cl. 431-20.000.

Torniainen, Matti J.: *See—*
Mathur, Achint P.; Torniainen, Matti J.; and Shawcross, James P., 4,438,807, Cl. 165-133.000.

Torstensson, Bengt-Arne. Device for taking ground water samples in soil and rock. 4,438,654, Cl. 73-864.520.

Toscano, Luciano; and Cappelletti, Leonardo M., to Pierrel S.p.A. Semisynthetic macrolidic antibiotics, intermediate compounds for their preparation and related pharmaceutical compositions containing them. 4,439,426, Cl. 424-181.000.

Toth, Laszlo: *See—*
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.

Towle, Herbert C.: *See—*
Marshall, Albert H.; Towle, Herbert C.; Bond, Gary M.; and Shaw, Bon F., 4,439,156, Cl. 434-12.000.

Townsend, Donald I.; Solem, Richard H.; Timm, Edward E.; and Caldecourt, Victor J., to Dow Chemical Company, The. Accelerating rate calorimeter and method of operation. 4,439,048, Cl. 374-34.000.

Toyo Stauffer Chemical Co., Ltd.: *See—*
Takitani, Masaru; Tomiyasu, Shizuo; and Baba, Keikichi, 4,439,539, Cl. 502-112.000.
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Toyota Jidosha Kabushiki Kaisha: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.
Kosuda, Hiroyuki; Kogo, Yasuo; Mishima, Yasuhiro; and Nakagawa, Masahiro, 4,438,738, Cl. 123-90.390.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nomura, Yoshihisa, 4,438,832, Cl. 188-73.450.
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,438,741, Cl. 123-188.00M.
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.

Tractel S.A.: *See—*
Desplats, Andre, 4,438,659, Cl. 74-529.000.

Traenckner, Hans-Joachim: *See—*
Buschhaus, Hans-Ulrich; Findeisen, Kurt; Traenckner, Hans-Joachim; and Beer, Wolfgang, 4,439,591, Cl. 528-73.000.

Treasurywala, Adi: *See—*
Sestanj, Kazimir; Abraham, Nedumparambil A.; Bellini, Francesco; and Treasurywala, Adi, 4,439,617, Cl. 560-39.000.

Treichel, Richard; and Moon, Seaton, to Deere & Company. Draft control system for agricultural tractor. 4,438,818, Cl. 172-9.000.

Trekoval, Jiri: *See—*
Sevcik, Stanislav; Trekoval, Jiri; Holata, Jan; and Stamberg, Jiri, 4,439,588, Cl. 525-366.000.

Trimnell, Donald; and Shasha, Baruch S., to United States of America, Agriculture. Encapsulation by entrapment within polyhydroxy polymer borates. 4,439,488, Cl. 428-402.240.

TRW Inc.: *See—*
Zehren, James N., 4,438,996, Cl. 339-40.000.

Tsau, Josef H.; and Young, James G., to G. D. Searle & Co. Dipeptide sweetener sulfate and sulfonate salts. 4,439,460, Cl. 426-548.000.

Tsiang, Horace H., to Wang Laboratories, Inc. Data processing machine with improved cache memory management. 4,439,829, Cl. 364-200.000.

Tsubakimoto Chain Company: *See—*
Murai, Masasumi; Kondo, Hirokazu; and Takino, Shigekatsu, 4,438,701, Cl. 104-172.00B.

Tsuchiya, Yoshikazu: *See—*
Sato, Makoto; Tsuchiya, Yoshikazu; and Ohmori, Taiji, 4,439,832, Cl. 364-426.000.

Tsuda, Kazuhiko: *See—*
Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, 4,438,555, Cl. 29-505.000.

Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Automatically fastening seatbelt system. 4,438,949, Cl. 280-804.000.

Tsuji, Masakazu: *See—*
Kojima, Tetsuhiko; Tsuji, Masakazu; and Sugimori, Shigeru, 4,439,340, Cl. 252-299.630.

Tsuji, Nobuo: *See—*
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, 4,439,486, Cl. 428-332.000.

Tsuji, Sadahiko: *See—*
Okajima, Hidekazu; and Tsuji, Sadahiko, 4,439,018, Cl. 350-430.000.

Tsumuki, Chiaki; Ueda, Katsuhiko; Nakamura, Hitoshi; Nakura, Toshiyuki; and Tsuda, Kazuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of fixing an annular element on a shaft. 4,438,555, Cl. 29-505.000.

Tsurufuji, Makoto: *See—*
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Tsushima, Rikio: *See—*
Matsunaga, Kinjiro; Okumura, Takeo; Naito, Sachio; and Tsushima, Rikio, 4,439,417, Cl. 424-70.000.

Tucker, Albert R.: *See—*
Williams, Michael R.; and Tucker, Albert R., 4,438,957, Cl. 285-223.000.

Tucker, Kenneth W.: *See—*
Joo' , Louis A.; Tucker, Kenneth W.; and McCown, Frank E., Jr., 4,439,382, Cl. 264-29.500.

Tuda, Mamoru: *See—*
Asai, Koichi; Oe, Kunio; and Tuda, Mamoru, 4,438,559, Cl. 29-740.000.

Tumber, Brian W.: *See—*
Skinner, Robert T. J.; and Tumber, Brian W., 4,438,747, Cl. 123-450.000.

Turer, Robert N.: *See*—
Zison, Stanley W.; and Turer, Robert N., 4,438,883, Cl. 239-553.300.
Turfco Manufacturing, Inc.: *See*—
Kaercher, William C., Jr., 4,438,873, Cl. 222-616.000.
Turner, David D. Hand-held cutting tool. 4,438,563, Cl. 30-156.000.
Turner, E. Wayne: *See*—
Hardigg, James S.; Turner, E. Wayne; and Strzegowski, Joseph C., Jr., 4,439,263, Cl. 156-497.000.
Turner, Harvey N., Jr., to Motorola, Inc. Stabilized high efficiency radio frequency amplifier. 4,439,741, Cl. 330-149.000.
Twieg, Robert J.: *See*—
Gendler, Paul L.; and Twieg, Robert J., 4,439,280, Cl. 204-2.000.
Tyndale Plains-Hunter, Ltd.: *See*—
Gould, Francis E.; and Johnston, Christian W., 4,439,583, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,584, Cl. 525-127.000.
Gould, Francis E.; and Johnston, Christian W., 4,439,585, Cl. 525-127.000.
UBE Industries: *See*—
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.
Uchida, Manabu: *See*—
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, 4,439,605, Cl. 536-71.000.
Uecker, Myron: *See*—
Merle, Rene; Uecker, Myron; and Kozlik, Robert, 4,438,634, Cl. 62-123.000.
Ueda, Katsuhiko: *See*—
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Ueda, Yasuhiro, to Olympus Optical Co., Ltd. Connecting device for an endoscopic television camera. 4,439,030, Cl. 354-62.000.
Uhde GmbH: *See*—
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.
Uhoch, John: *See*—
Protzmann, Donald E.; Roveda, Ronald P.; and Uhoch, John, 4,439,190, Cl. 604-319.000.
Ulrich, Lawrence W.; and Walker, Connie W., to Durable Packaging Corporation. Belt tracking and tensioning arrangement. 4,438,617, Cl. 53-137.000.
Ulug, Mehmet E., to General Electric Company. Bimodal bus accessing system. 4,439,856, Cl. 370-85.000.
Umemoto, Yoshiro: *See*—
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,439,573, Cl. 524-451.000.
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, to Sanraku-Ocean Co., Ltd. Anthracycline derivatives of *β*-rhodomycinone glycosides. 4,439,603, Cl. 536-6.400.
Umino, Hiroshi; and Takano, Ikuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Circuit breaker operating apparatus. 4,439,653, Cl. 200-153.0SC.
Unarco Industries, Inc.: *See*—
Loomis, Russell M.; Gaikowski, Michael D.; and Brzezinski, Denis R., 4,439,076, Cl. 410-153.000.
UNC Recovery Corporation: *See*—
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., 4,439,405, Cl. 423-10.000.
Unger, Hans P. O.; and Westberg, Johan E. H., to Unger, Hans Peter Olof; and Westberg, Johan Eric Hayden. Skin incising device. 4,438,770, Cl. 128-637.000.
Unger, Hans Peter Olof: *See*—
Unger, Hans P. O.; and Westberg, Johan E. H., 4,438,770, Cl. 128-637.000.
Unied Scientific Corporation: *See*—
Hesterman, Victor W.; and Drummond, William E., 4,439,732, Cl. 324-247.000.
Union Carbide Corporation: *See*—
Barber, Alan G., 4,439,561, Cl. 524-13.000.
Kawakami, James H.; See, Benito; Jones, Thomas R.; and Maresca, Louis M., 4,439,586, Cl. 525-169.000.
Kupcikevicius, Vytautas; and Raudys, Vytas A., 4,438,545, Cl. 17-49.000.
Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., 4,439,220, Cl. 62-31.000.
Sheads, Richard E., 4,439,368, Cl. 260-404.000.
Union Oil Company of California: *See*—
Ghandehari, Mohammad H., 4,439,232, Cl. 75-10.00R.
United Industries Corporation: *See*—
Albanese, James J., 4,439,342, Cl. 252-305.000.
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United States of America
Agriculture: *See*—
Trimnell, Donald; and Shasha, Baruch S., 4,439,488, Cl. 428-402.240.
Air Force: *See*—
Hawrylo, Frank Z., 4,439,399, Cl. 420-580.000.
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Masak, Raymond J., 4,439,769, Cl. 343-380.000.
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Christy, Orrin D., 4,439,012, Cl. 350-294.000.
Jackson, David A., Jr., 4,439,267, Cl. 156-614.000.
Knapp, Charles A., 4,438,700, Cl. 102-334.000.
Energy: *See*—
Kim, Jinchoon, 4,439,395, Cl. 376-130.000.
Kurnit, Norman A., 4,439,860, Cl. 372-70.000.
Shiue, Chyng-Yann; and Wolf, Alfred P., 4,439,414, Cl. 424-1.100.
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Pfefferle, William C., 4,439,136, Cl. 431-7.000.
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Nola, Frank J., 4,439,718, Cl. 318-729.000.
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Reid, Margaret A.; Post, Robert E.; and Soltis, Daniel G., 4,439,465, Cl. 427-115.000.
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Kobayashi, Herbert S.; Shores, Paul W.; and Rozas, Patrick, 4,439,766, Cl. 343-9.00R.
Navy: *See*—
Breglia, Denis R.; Lobb, Daniel R.; and Spooner, Archer M., 4,439,157, Cl. 434-40.000.
Cukauskas, Edward J., 4,439,269, Cl. 156-643.000.
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Swiatosz, Edmund, 4,439,341, Cl. 252-305.000.
U.S. Philips Corporation: *See*—
Berney, Jean-Claude, 4,439,717, Cl. 318-696.000.
Bril, Thijs W.; and van den Hoek, Willibrordus G. M., 4,439,294, Cl. 204-192.00E.
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Hermeyer, Bernd; Mester, Heinz; and Negle, Hans, 4,439,869, Cl. 378-113.000.
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Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.
Pelletier, Joel A.; and Breuillard, Robert, 4,439,695, Cl. 307-477.000.
van de Bult, Oelke, 4,439,792, Cl. 360-106.000.
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Antonellis, Stephen M., 4,439,107, Cl. 416-95.000.
Ault, Earle A.; and Bevan, Charles E., 4,439,241, Cl. 134-22.170.
Ferris, Donald L.; Olster, Elliot F.; and Marchitto, Michael J., 4,439,106, Cl. 416-61.000.
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Kessler, John O., 4,438,591, Cl. 47-1.400.
University of California, The Regents of the: *See*—
McIlroy, Malcolm B.; and Targett, Ralph C., 4,439,679, Cl. 250-282.000.
Sovak, Milos; and Ranganathan, Ramachandran, 4,439,613, Cl. 549-347.000.
University of Illinois Foundation: *See*—
Brightman, Alan H., II; and Theodorakis, Michael C., 4,439,198, Cl. 604-894.000.
Holonyak, Nick, Jr., 4,439,782, Cl. 357-17.000.
University of Miami: *See*—
Le Mehaute, Bernard J., 4,439,058, Cl. 405-24.000.
University of Minnesota, Regents of the: *See*—
Blackshear, Perry J.; Palmer, John L.; and Rohde, Thomas D., 4,439,181, Cl. 604-56.000.
Broadhurst, John H., 4,439,680, Cl. 250-310.000.
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Friesen, W. Otto; and Block, Gene D., 4,438,771, Cl. 128-671.000.
University Patents, Inc.: *See*—
Garito, Anthony F., 4,439,514, Cl. 430-272.000.
Lauks, Imants R., 4,439,464, Cl. 427-76.000.
UOP Inc.: *See*—
Lomas, David A.; and Thompson, Gregory J., 4,439,533, Cl. 502-6.000.
Urban, Peter; Johnson, Russell W.; and Hilfman, Lee, 4,438,816, Cl. 166-303.000.
Wood, Charles E.; and Vangelisti, Ronald J., 4,439,687, Cl. 290-40.00R.
Upadhyayula, Lakshminarasimha C.: *See*—
Kumar, Mahesh; and Upadhyayula, Lakshminarasimha C., 4,439,744, Cl. 330-285.000.
Upjohn Company, The: *See*—
Coleman, James H., 4,439,451, Cl. 424-317.000.
Robert, Andre; and Lancaster, Cleo, 4,439,445, Cl. 424-304.000.
Vecchio, Thomas J., 4,439,419, Cl. 424-78.000.
Wiley, Paul F., 4,439,602, Cl. 536-6.400.
Upjohn Manufacturing Company M, The: *See*—
Coleman, James H., 4,439,450, Cl. 424-317.000.
Upp, Daniel C.: *See*—
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Menzel, Klaus; Erd, Ludwig; and Marinescu, Marlene, 4,439,700, Cl. 310-13.000.
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Runyon, James R.; and Valenti, Salvatore, 4,439,203, Cl. 8-496.000.
Valentine, Gordon A., to Stanley Aviation Corporation. Torsionally deflectable seal ring assembly for fluid-receiving systems. 4,438,959, Cl. 285-340.000.
Valeron Corporation, The: *See*—
Stephens, Raymond A., 4,438,539, Cl. 10-120.50R.
Valimont, James L., to PPG Industries, Inc. Method and apparatus for assembling sandwiches comprising hot bent glass sheets. 4,439,264, Cl. 156-556.000.
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Pokladnik, Roger L.; and Valka, William A., 4,438,817, Cl. 166-341.000.
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Menzel, Stanley W. O.; Mominee, David E.; and Vance, Gilbert W., 4,438,643, Cl. 72-49.000.
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van den Bemt, Johannes C. A.: *See*—
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., 4,439,049, Cl. 374-124.000.
van den Hoek, Willibrordus G. M.: *See*—
Bril, Thijs W.; and van den Hoek, Willibrordus G. M., 4,439,294, Cl. 204-192.00E.
van de Plassche, Rudy J.: *See*—
Kilian, Ernst A.; Graffenberger, Wilhelm; Dijkmans, Eise C.; and van de Plassche, Rudy J., 4,439,739, Cl. 330-107.000.
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Malick, Emil A.; Vandervpen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.
van der Veen, Romke. Method and device for measuring the density of fluids particularly dredgings. 4,438,651, Cl. 73-433.000.
Vangelisti, Ronald J.: *See*—
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van Hes, Roelof; and Grosscurt, Arnoldus C., to Duphar International Research B.V. 1-Alkoxycarbonylphenylcarbamoyl-3-phenyl-4-cyanoalkyl-2-pyrazolines and use as insecticides. 4,439,440, Cl. 424-273.00P.
Van Kol, Gerald W. Inductor type half wave antenna. 4,439,772, Cl. 343-749.000.
van Meurs, Hubrecht C. A.: *See*—
Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, 4,439,306, Cl. 208-11.00R.
van Schagen, Nicolaas L.: *See*—
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Varga, Sandor L.: *See*—
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.
Varnagy, Zoltan: *See*—
Nagy, Laszlo; Papp, Laszlo; Toth, Laszlo; Jankovics, Endre; and Varnagy, Zoltan, 4,439,131, Cl. 425-436.00R.
Varo, Inc.: *See*—
Grippe, James M., 4,439,821, Cl. 363-26.000.
Varta Batterie Aktiengesellschaft: *See*—
Bittihn, Rainer; and Yalcin, Eren, 4,439,502, Cl. 429-104.000.
Vaughan, Daniel J. Electrodialytic purification process. 4,439,293, Cl. 204-180.00P.
Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See*—
Doliner, Herbert, 4,438,697, Cl. 101-183.000.
Veber, Daniel F.: *See*—
Holly, Frederick W., deceased; Christy, Marcia E.; Shepard, Kenneth L.; Strachan, Robert G.; Varga, Sandor L.; and Veber, Daniel F., 4,439,359, Cl. 260-112.50R.
Vecchiarelli, Francis, to Hunter Douglas International N.V. Headrail installation bracket. 4,438,897, Cl. 248-544.000.
Vecchio, Thomas J., to Upjohn Company, The. Method of treating gastric hyperacidity in humans employing a copolymer of polyethylenepolyamine and a bifunctional substance as epichlorhydrin. 4,439,419, Cl. 424-78.000.
Veillette, Pierre. Exercise device. 4,438,920, Cl. 272-67.000.
Venables, Herbert J., III; and Venables, Herbert J., IV. Heat exchanger tube. 4,438,808, Cl. 165-150.000.
Venables, Herbert J., IV: *See*—
Venables, Herbert J., III; and Venables, Herbert J., IV, 4,438,808, Cl. 165-150.000.
Vensko, George: *See*—
Kneib, Kristine N.; and Vensko, George, 4,439,839, Cl. 364-900.000.
Verberne, Wim J. C.; and Hadley, John S., to OMI International Corporation. Zinc cobalt alloy plating. 4,439,283, Cl. 204-38.00R.
Verdini, Antonio S.; and Viscomi, Giuseppe C., to Anic S.p.A. Retro-inverso analogues of C-terminal penta and hexapeptides of Substance P. 4,439,360, Cl. 260-112.50R.
Veronesi, Luciano, to Westinghouse Electric Corp. Latching mechanism. 4,439,054, Cl. 403-322.000.
Verweij, Hendrik: *See*—
Joormann, Hendrik J. M.; Verweij, Hendrik; and Haisma, Jan, 4,439,529, Cl. 501-45.000.
Veselov, Alexandr V.: *See*—
Abramov, Vsevolod V.; Kuznetsov, Vsevolod V.; Veselov, Alexandr V.; Tkhai, Vitaly S.; Rysin, Nikolai I.; and Gerasimov, Vasily I., 4,439,390, Cl. 264-297.200.
Vetco Offshore, Inc.: *See*—
Quigg, Daniel F.; Jones, Darrell L.; McFerron, Richard G.; and Bell, James L., Jr., 4,439,055, Cl. 403-330.000.
Veyrassat, Louis: *See*—
Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, 4,438,886, Cl. 242-25.00A.
Vickers, William E.: *See*—
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., 4,439,405, Cl. 423-10.000.
Vickery, Brian H.: *See*—
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.
Victor Company of Japan, Ltd.: *See*—
Hirata, Atsumi, 4,439,791, Cl. 358-342.000.
Victor Equipment Company: *See*—
Singh, Gurvinder P.; and Jolly, William D., 4,439,249, Cl. 148-9.00R.
Victorino, Robert W., to Growers Vacuum Cool Company. Carton handling system. 4,439,093, Cl. 414-786.000.
Vierkotter, Peter; and Weltgen, Paul-Otto, to Henkel Kommanditgesellschaft auf Aktien. Dosing device with ball valve and operating method. 4,438,869, Cl. 222-1.000.
Viglione, Gaetano T., to Sanders Associates, Inc. Process for removal of magnetic coatings from computer memory discs. 4,439,289, Cl. 204-146.000.
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Heymes, Rene; and Vignau, Michel, 4,439,433, Cl. 424-246.000.
Villamosipari Kutato Intezet: *See*—
Boday, Otto; Herpay, Andras; Krajcsovics, Ferenc; Neveri, Istvan; Pete, Sandor; Pocsy, Ferenc; Szikora, Bela; and Szirmai, Endre, 4,438,706, Cl. 110-238.000.
Villettaz, Jean-Claude, to Novo Industri A/S. Enzymatic treatment of wine and must. 4,439,455, Cl. 426-12.000.
Villiger, Alois: *See*—
Rich, Roland; Villiger, Alois; and Widmer, Erich, 4,439,015, Cl. 350-350.00R.
Virginville Patents, Inc.: *See*—
Sernaker, Howard, 4,439,202, Cl. 8-471.000.
Viriyayuthakorn, Montri: *See*—
Kassahun, Bahiru; and Viriyayuthakorn, Montri, 4,439,467, Cl. 427-163.000.
Viscomi, Giuseppe C.: *See*—
Verdini, Antonio S.; and Viscomi, Giuseppe C., 4,439,360, Cl. 260-112.50R.
Vital Kogyo Kabushiki Kaisha: *See*—
Nishimura, Koji, 4,438,905, Cl. 254-389.000.
Voelskow, Peter. Method and apparatus for the sorting out of plastic foils from a mixture of refuse. 4,438,851, Cl. 209-616.000.
Voetter, Heinz; van Meurs, Hubrecht C. A.; Darton, Richard C.; and Krishna, Rajamani, to Shell Internationale Research Maatschappij B.V. Process for the extraction of hydrocarbons from a hydrocarbon-bearing substrate and an apparatus therefor. 4,439,306, Cl. 208-11.00R.
Vogel, Stephen H., to Monsanto Company. Directly compressible acetaminophen granulation. 4,439,453, Cl. 424-324.000.
Volkswagenwerk Aktiengesellschaft: *See*—
Fiala, Ernst, 4,438,664, Cl. 74-866.000.
Schmidt, Dieter, 4,438,665, Cl. 74-867.000.
Voll, Manfred; Rothbuhr, Lothar; and Kuhner, Gerhard. Process and apparatus for the production of carbon black. 4,439,401, Cl. 422-150.000.
von Allworden, Wilhelm, to Howard Machinery Limited. Pneumatically operated press. 4,438,690, Cl. 100-116.000.
Vratny, Frederick: *See*—
Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, 4,439,870, Cl. 378-143.000.
VVR Associates: *See*—
Leonard, Eugene, 4,439,785, Cl. 358-120.000.
W. R. Grace & Co.: *See*—
Bryant, George E., 4,438,611, Cl. 52-309.200.
Guthrie, James L.; and Kehr, Clifton L., 4,439,553, Cl. 521-159.000.
W. R. Grace & Co., Cryovac Division: *See*—
Ferguson, Daniel F.; Stringer, Frederick D.; and Esakov, Michael D., 4,439,478, Cl. 428-137.000.
W. R. Meadows, Inc.: *See*—
Sackis, John J.; and Anderson, Paul H., 4,439,563, Cl. 524-96.000.
W. Schlafhorst & Co.: *See*—
Rohner, Joachim, 4,438,621, Cl. 57-22.000.
Wada, Akihiro; Tazaki, Kichiya; Tahara, Tamotsu; Suzuki, Hiroshi; and Mizutani, Yukihisa, to Asahi-Dow Limited. Injection molded articles with improved surface characteristics. 4,439,492, Cl. 428-409.000.
Wada, Hiroki: *See*—
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, 4,439,153, Cl. 433-200.000.

Wada Seimitsu Shiken Kabushiki Kaisha: *See*—
Kawahara, Haruyuki; Ishizaki, Nobuhiro; and Wada, Hiroki, 4,439,153, Cl. 433-200.000.

Wagatsuma, Kazuo: *See*—
Munakata, Hiroaki; Kobayashi, Makio; Wagatsuma, Kazuo; Sato, Shigeru; Tsurufuji, Makoto; Enomoto, Hiroshi; and Matsumura, Shingo, deceased, 4,439,448, Cl. 424-309.000.

Wagner, John R., Jr.: *See*—
Hein, Carl C.; Wagner, John R., Jr.; and Powell, Mark S., 4,439,493, Cl. 428-414.000.

Wagoner, Max A.: *See*—
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,438,775, Cl. 131-300.000.

Waldo, Russell W.; and Miller, Cardel E., to Ideal Security Hardware Corporation. Looped rod safety stop. 4,438,544, Cl. 16-85.000.

Walker, Connie W.: *See*—
Ulrich, Lawrence W.; and Walker, Connie W., 4,438,617, Cl. 53-137.000.

Walker, Keith A. M.: *See*—
Hallesy, Duane W.; Jones, Richard E.; Vickery, Brian H.; and Walker, Keith A. M., 4,439,441, Cl. 424-273.00R.

Walker, Lance A.: *See*—
Janssen, Donovan M.; Mantey, John P.; Roller, Donald C.; and Walker, Lance A., 4,438,917, Cl. 271-227.000.

Wallat, Siegfried: *See*—
Moller, Hinrich; Wallat, Siegfried; and Bartnik, Friedhelm, 4,439,418, Cl. 424-70.000.

Wallther, Harry, to Stallningsgruppen i Goteborg Aktiebolag. Device for coupling together laterally directed scaffold elements to uprights in a scaffold or the like. 4,439,052, Cl. 403-49.000.

Walter, Robert J., to Rockwell International Corporation. Composition control of electrodeposited nickel-cobalt alloys. 4,439,284, Cl. 204-43.00T.

Walton, Eric K.; and Harris, Gary W. Automatic control system having manual control engageable at will. 4,438,662, Cl. 74-625.000.

Wang Laboratories, Inc.: *See*—
Tsiang, Horace H., 4,439,829, Cl. 364-200.000.

Wang, Robert, to Midland-Ross Corporation. Process and device for gaseous atmosphere separation in plants for heat treatment under atomosphere. 4,439,212, Cl. 55-27.000.

Ward, Russell G. Combination back pack and tent frame. 4,438,876, Cl. 224-154.000.

Warner-Lambert Company: *See*—
Cook, P. Dan, 4,439,604, Cl. 536-24.000.

Warren, Raymond H.: *See*—
Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., 4,439,690, Cl. 307-272.00R.

Washizawa, Yasuo: *See*—
Shinozaki, Fumiaki; Washizawa, Yasuo; Ikeda, Tomoaki; Nakao, Sho; and Kondoh, Syunichi, 4,439,515, Cl. 430-285.000.

Watanabe, Hidefumi, to Daieigiken, Inc. Machine for automatically making rolled food products such as egg rolls and the like. 4,439,124, Cl. 425-112.000.

Watanabe, Shoji; Miho, Takuya; Nakashima, Naoki; and Ikemoto, Yoshiyuki, to Daicel Chemical Industries, Ltd. Polyurethane having excellent elastic recovery and elastic filament of the same. 4,439,599, Cl. 528-80.000.

Watanabe, Shunso F., to Ford Motor Company. Engine idle speed control device. 4,438,745, Cl. 123-339.000.

Water-Line S.A.: *See*—
Bertoglio, Guido, 4,439,042, Cl. 366-154.000.

Waters, Donald I. Emergency rescue box. 4,438,829, Cl. 182-150.000.

Webasto-Werk W. Baier GmbH & Co.: *See*—
Galtz, Rudiger; and Reinhardt, Rudolf, 4,439,095, Cl. 415-52.000.

Weber, Harold J. Teaching indicator for efficient vehicle gearshift operation. 4,439,158, Cl. 434-71.000.

Weber, Harold J. Metal object locator including frequency shift detector. 4,439,734, Cl. 324-327.000.

Weber, Kurt: *See*—
Meisser, Marc; Weber, Kurt; and Veyrassat, Louis, 4,438,886, Cl. 242-25.00A.

Weber, Richard A.: *See*—
Heim, Edward J.; Hennessey, Stephen B.; Janssen, Curtis R.; Johnson, R. Shannon; League, Richard B.; Shinogle, Ronald D.; and Weber, Richard A., 4,438,619, Cl. 56-119.000.

Weglin, Walter, to Gillespie, Robert J. Drafting machine. 4,438,569, Cl. 33-438.000.

Wegner, Eugene H.: *See*—
Malick, Emil A.; Vanderveen, John W.; Hitzman, Donald O.; and Wegner, Eugene H., 4,439,523, Cl. 435-243.000.
Shay, Lucas K.; and Wegner, Eugene H., 4,439,525, Cl. 435-247.000.

Wehr Corporation: *See*—
Long, Gary R.; and Okunami, Hideo, 4,439,129, Cl. 425-352.000.

Weid, Manfred: *See*—
Altemark, Detlef; Sommers, Hans; and Weid, Manfred, 4,439,135, Cl. 431-2.000.

Weight, Merle E.; and Swenson, Theodore S., to Sperry Corporation. Electrostatic discharge protection system. 4,439,809, Cl. 361-220.000.

Weirich, Stephen; and Crothers, James L., to Lenni Products, Inc. Cutter for slot wedges. 4,438,671, Cl. 83-212.000.

Weisman, Morey. Modified polyurethane product having improved load-bearing characteristics. 4,439,548, Cl. 521-130.000.

Weiss, Eduard: *See*—
Kuhls, Jurgen; Weiss, Eduard; and Burgstaller, Gottfried, 4,439,385, Cl. 264-37.000.

Weiss, Martin J.: *See*—
Floyd, Middleton B., Jr.; Weiss, Martin J.; Poletto, John F.; Schaub, Robert E.; and Bernady, Karel F., 4,439,365, Cl. 260-395.000.

Weisser, Jurgen: *See*—
Puppe, Lothar; and Weisser, Jurgen, 4,439,409, Cl. 423-328.000.

Wells, Alton R. Pedestal type electro-heated container. 4,439,668, Cl. 219-438.000.

Weltgen, Paul-Otto: *See*—
Vierkotter, Peter; and Weltgen, Paul-Otto, 4,438,869, Cl. 222-1.000.

Wendel, Wendel R., to Space Structures International Corp. Orba-hub. 4,438,615, Cl. 52-648.000.

Wentland, Mark P.; and Bailey, Denis M., to Sterling Drug Inc. 1,3-Dioxolo(4,5-G)quinoline compounds. 4,439,436, Cl. 424-258.000.

Werkheiser, James S., to Harris Graphics Corporation. Palletizer for newspaper bundles. 4,439,084, Cl. 414-62.000.

Westberg, Johan E. H.: *See*—
Unger, Hans P. O.; and Westberg, Johan E. H., 4,438,770, Cl. 128-637.000.

Westberg, Johan Eric Hayden: *See*—
Unger, Hans P. O.; and Westberg, Johan E. H., 4,438,770, Cl. 128-637.000.

Westcott, Douglas W.: *See*—
Maley, Gerald A.; Warren, Raymond H.; and Westcott, Douglas W., 4,439,690, Cl. 307-272.00R.

Western Electric Co., Inc.: *See*—
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.
Kassahun, Bahiru; and Viriyayuthakorn, Montri, 4,439,467, Cl. 427-163.000.

Westinghouse Electric Corp.: *See*—
Gegaregian, Albert A.; Kuruma, Dennis K.; and Lengel, Kenneth W., 4,438,866, Cl. 220-319.000.
Geohegan, Kenneth P., Jr.; and Gruen, Henry M., 4,439,845, Cl. 367-87.000.
Gyugyi, Laszlo; Smith, Geoffrey M.; and Stacey, Eric J., 4,439,823, Cl. 363-161.000.
Ogland, Jon W.; Bradley, Joe C.; and Mergerian, Dickron, 4,439,016, Cl. 350-356.000.
Rohanna, James E., 4,438,831, Cl. 187-30.000.
Veronesi, Luciano, 4,439,054, Cl. 403-322.000.
York, Theodore H.; and Moates, Roger D., 4,439,764, Cl. 340-870.020.

WFI International, Inc.: *See*—
Ryan, Bobby W., 4,438,955, Cl. 285-189.000.

Wheeler, Robert P., to Concord Laboratories, Inc. Two-dose syringe. 4,439,184, Cl. 604-90.000.

Whelan, Cahal. Dental device. 4,439,151, Cl. 433-60.000.

Whipps, George E., to Whipps, Inc. Aluminum stoplogs. 4,439,061, Cl. 405-104.000.

Whipps, Inc.: *See*—
Whipps, George E., 4,439,061, Cl. 405-104.000.

White, Bobby E. Drawworks. 4,438,904, Cl. 254-311.000.

White, Harold J. Filling hole swing valve for sandblasters. 4,439,073, Cl. 406-125.000.

Whiteside, C. H. Methane generator. 4,439,315, Cl. 210-90.000.

Wico Corporation: *See*—
Peters, Albin, 4,438,929, Cl. 273-127.00R.
Peters, Albin, 4,438,930, Cl. 273-127.00R.
Wiczer, Max, 4,438,928, Cl. 273-121.00R.

Wiczer, Max, to Wico Corporation. Pinball game with ganged kicker mechanisms. 4,438,928, Cl. 273-121.00R.

Widmer, Erich: *See*—
Rich, Roland; Villiger, Alois; and Widmer, Erich, 4,439,015, Cl. 350-350.00R.

Wiebke, Gunther, deceased (by Wieloch, Peter, executor); Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, to Elektroschmelzwerk Kempten GmbH. Adsorption device for the dry purification of gases. 4,439,214, Cl. 55-74.000.

Wiederkehr, Hans. Toolholder for rotary tool. 4,439,075, Cl. 408-239.00R.

Wieloch, Peter, executor: *See*—
Wiebke, Gunther, deceased; Maurer, Gunter; Laurijsen, Piet J. L.; and Kurth, Roman, 4,439,214, Cl. 55-74.000.

Wiggins, Richard H.; Doddington, George; and Cato, Craig J., to Texas Instruments Incorporated. Taught learning aid. 4,439,161, Cl. 434-201.000.

Wiig, Selmer L., to Lockheed Electronics Company, Inc. Tape transport system. 4,438,891, Cl. 242-190.000.

Wilbur-Ellis Company: *See*—
Schulteis, David T., 4,439,224, Cl. 71-76.000.

Wilcoxson, Anthony L.: *See*—
Gagliani, John; Lee, Raymond; and Wilcoxson, Anthony L., 4,439,381, Cl. 264-26.000.

Wildman, John R.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Game device with template for arranging objects. 4,438,586, Cl. 46-1.00R.

Wiley, Paul F., to Upjohn Company, The. Nogalamycin derivatives. 4,439,602, Cl. 536-6.400.

Wilgus, Herbert S.: *See*—
Kofron, James T.; Booms, Robert E.; Jones, Cynthia G.; Haefner, John A.; Wilgus, Herbert S.; and Evans, Francis J., 4,439,520, Cl. 430-434.000.

Wilhelm, Ronald K.: *See*—
Craig, Glenn D.; Wilhelm, Ronald K.; and Rulseh, Roy M., 4,439,138, Cl. 431-12.000.
Wilinsky, Jack. Motion sensitive firable device. 4,438,765, Cl. 128-303.100.
Wilkes, Dean M., to Raytheon Company. Dual fetch microsequencer. 4,439,827, Cl. 364-200.000.
Wilkinson, Gregory J., to Dresser Industries, Inc. Apparatus for decentralizing and orienting a well logging or perforating instrument. 4,438,810, Cl. 166-65.00M.
Will, Richard. Windmill having centrifically feathered rotors to control rotor speed. 4,439,108, Cl. 416-131.000.
Willi, Hanspeter: *See*—
Michl, Rudy; and Willi, Hanspeter, 4,439,380, Cl. 264-16.000.
Williams, Michael R.; and Tucker, Albert R., to FMC Corporation. Constant motion swivel joint. 4,438,957, Cl. 285-223.000.
Williams, Ralph J., to Dentsply Research & Development Corp. Armrest for a seat. 4,438,975, Cl. 297-412.000.
Williams, Robert S.: *See*—
Wilwerding, Carl M.; and Williams, Robert S., 4,439,209, Cl. 48-76.000.
Williard, Daniel G.: *See*—
Mays, Charles D.; Wagoner, Max A.; and Williard, Daniel G., 4,438,775, Cl. 131-300.000.
Willis, Robert E. Portable door brace. 4,438,640, Cl. 70-94.000.
Wilmot, Richard D., to Hughes Aircraft Company. Radar video processor. 4,439,765, Cl. 343-6.00A.
Wilms, Karl-Heinz, to Optische Werke G. Rodenstock. Optical device with two reflecting surfaces. 4,439,026, Cl. 351-219.000.
Wilson, John V.; and Kays, William B., to Globe Linings, Inc. Gas venting floating cover. 4,438,863, Cl. 220-227.000.
Wilson, William F., to Great Lakes Carbon Corporation. Oxidation retardant for graphite. 4,439,491, Cl. 428-408.000.
Wilwerding, Carl M.; and Williams, Robert S. Thermal decomposition apparatus. 4,439,209, Cl. 48-76.000.
Wimmer, Robert: *See*—
Hagn, Bruno; Neuhauser, Werner; and Wimmer, Robert, 4,439,013, Cl. 350-307.000.
Winter, Roland A. E.; Malherbe, Roger F.; and Tieh-Yin Fu, Frank, to Ciba-Geigy Corporation. Oligomeric esteramides containing pendant hindered amine groups. 4,439,565, Cl. 524-103.000.
Winzer, Gerhard, to Siemens Aktiengesellschaft. Branching element for optical waveguides. 4,439,005, Cl. 350-96.150.
Wischerath and Schreiner KG: *See*—
Eckert, Josef, 4,438,871, Cl. 222-137.000.
Wittmann, Stephan: *See*—
Mayer, Walter; and Wittmann, Stephan, 4,438,624, Cl. 57-352.000.
Wohlmuth, Clinton J., to Cummins Engine Company, Inc. Surface temperature control apparatus. 4,438,598, Cl. 51-165.730.
Wolf, Alfred P.: *See*—
Shiue, Chyng-Yann; and Wolf, Alfred P., 4,439,414, Cl. 424-1.100.
Wolf, Dietmar: *See*—
Seidel, Albert; and Wolf, Dietmar, 4,439,111, Cl. 417-379.000.
Wolf, Ludwig, Jr.: *See*—
Dennehey, T. Michael; Greff, Richard J.; and Wolf, Ludwig, Jr., 4,439,188, Cl. 604-283.000.
Wolfrum, Gerhard: *See*—
Hugl, Herbert; Wolfrum, Gerhard; and Lehment, Klaus-Friedrich, 4,439,372, Cl. 260-465.00E.
Wood, Charles E.; and Vangelisti, Ronald J., to UOP Inc. Generator synchronization in power recovery units. 4,439,687, Cl. 290-40.00R.
Wood, Eric, to Insituform International N.V. Formation of a lining in pipelines. 4,439,469, Cl. 427-230.000.
Wood, Robert S., to Plessey Overseas Limited. Pump for pumping a liquid containing solid contaminants. 4,439,109, Cl. 418-88.000.
Woodard, Kenneth E., Jr.: *See*—
Ford, James M.; Dean, Robert A.; Woodard, Kenneth E., Jr.; and Branco, Antonio, 4,439,298, Cl. 204-258.000.
Kircher, Morton S.; Justice, David D.; Woodard, Kenneth E., Jr.; and Harrison, Charles H., 4,439,297, Cl. 204-257.000.
Woodland International Corporation: *See*—
Parker, Donald L.; Porter, Wilbur A.; and Rogers, Robert C., 4,438,557, Cl. 29-576.00B.
Worthing, Ralph. Deflecting device for truck load. 4,438,968, Cl. 296-1.00R.
Wrighton, Mark S.; Bookbinder, Dana C.; Bruce, James A.; Dominey, Raymond N.; and Lewis, Nathan S., to Massachusetts Institute of Technology. Redox mediation and hydrogen-generation with bipyridinium reagents. 4,439,302, Cl. 204-290.00R.
Wu, Chung P., to RCA Corporation. Electromagnetic radiation annealing of semiconductor material. 4,439,245, Cl. 148-1.500.
Wurmli, Albert: *See*—
Lauton, Alain; and Wurmli, Albert, 4,439,201, Cl. 8-436.000.
Wurtenberg, Oscar A.: *See*—
King, Michael H.; Poppe, Lee W., Jr.; and Wurtenberg, Oscar A., 4,438,682, Cl. 99-323.700.
Xenell Corporation: *See*—
Fajt, John, 4,439,801, Cl. 361-55.000.
Xerox Corporation: *See*—
Pan, Frank Y.; Morrison, Ian D.; and Teuscher, Leon A., 4,439,507, Cl. 430-058.000.
Schank, Richard L., 4,439,509, Cl. 430-132.000.
Yabu, Tadahiko: *See*—
Takahara, Ichiro; and Yabu, Tadahiko, 4,439,850, Cl. 369-77.200.
Yabune, Hideo; Ikemoto, Yoshiyuki; Kato, Younosuke; and Uchida, Manabu, to Daicel Chemical Industries, Ltd. Process for producing cellulose acetate. 4,439,605, Cl. 536-71.000.
Yakovlev, Arian M.: *See*—
Nikolaev, Nikolai I.; Tereschenko, Lev A.; Yakovlev, Arian M.; Kovalenko, Vitaly I.; Lipatov, Nikolai K.; Tatevosian, Ruben A.; and Titov, Mikhail Y., 4,438,813, Cl. 166-177.000.
Yalcin, Eren: *See*—
Bittihn, Rainer; and Yalcin, Eren, 4,439,502, Cl. 429-104.000.
Yamabe, Masaaki; and Akiyama, Katsuyuki, to Asahi Glass Company, Ltd. Permselective element for gas separation. 4,439,217, Cl. 55-158.000.
Yamada, Tadao: *See*—
Tsuge, Hiroshi; Katsuno, Mitsuaki; Nishimura, Yuji; Kubota, Tatsushi; Yamada, Tadao; and Hayashi, Yoshihiro, 4,438,949, Cl. 280-804.000.
Yamada, Tadatoshi: *See*—
Okamoto, Kouichi; Sakuyama, Masaki; Yamada, Tadatoshi; and Nakamura, Shiro, 4,439,701, Cl. 310-45.000.
Yamada, Yasuyuki; Fujiyama, Masaaki; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,439,486, Cl. 428-332.000.
Yamagishi, Takashi: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.
Yamaguchi, Hiroaki: *See*—
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,707, Cl. 313-130.000.
Hattori, Tadashi; Yamaguchi, Hiroaki; Nishida, Minoru; and Ohta, Minoru, 4,439,708, Cl. 313-140.000.
Ozaki, Tadashi; Hattori, Tadashi; and Yamaguchi, Hiroaki, 4,438,647, Cl. 73-117.300.
Yamaguchi, Hiroshi; and Ikeura, Kenji, to Nissan Motor Co., Ltd. Method and apparatus for detecting the gear position of transmission. 4,439,833, Cl. 364-431.090.
Yamaguchi, Hiroshi: *See*—
Ikeura, Kenji; Yamaguchi, Hiroshi; Sawamoto, Kunifumi; and Morita, Tatsuo, 4,438,748, Cl. 123-491.000.
Yamaguchi, Shin, to Canon Kabushiki Kaisha. Zoom lens. 4,439,017, Cl. 350-427.000.
Yamaji, Masamura; Fujita, Shozo; Futatsuishi, Shunichi; and Takushima, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Stacking type movable large display device. 4,438,580, Cl. 40-590.000.
Yamashita, Mitsuo: *See*—
Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, 4,439,797, Cl. 360-134.000.
Yamashita, Takeo: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.
Yamauchi, Takafumi: *See*—
Kammuri, Youichi; Yamauchi, Takafumi; and Takahashi, Toshikatsu, 4,439,456, Cl. 426-276.000.
Yamauchi, Takahiko: *See*—
Itoh, Hideo; and Yamauchi, Takahiko, 4,439,841, Cl. 365-51.000.
Yanadori, Michio; Hosoda, Yuji; Nakajima, Isao; Igarashi, Kenichi; Kurosawa, Makoto; Hosoya, Kensei; and Kobayashi, Tsuneki, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Printing apparatus with cooling of hammer printing coils. 4,438,692, Cl. 101-93.040.
Yanizeski, George M.: *See*—
Aloisio, Charles J., Jr.; Brockway, George S., II; Levy, Alvin C.; Schneider, Randy G.; and Yanizeski, George M., 4,439,632, Cl. 174-106.00D.
Yanmar Diesel Engine Co., Ltd.: *See*—
Sasaki, Yoshihiro, 4,438,733, Cl. 123-41.620.
Yano, Takashi, to Ricoh Company, Ltd. Image recording method and apparatus. 4,439,781, Cl. 346-153.100.
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, to Nissan Motor Corp.; and Kato Hatsujyo Kaisha Ltd. Holder. 4,438,894, Cl. 248-73.000.
Yasui, Kiyoshi: *See*—
Kondo, Mitsuru; Yasui, Kiyoshi; Miyake, Makoto; Iwasaki, Hiroshi; and Shiraishi, Tetsuo, 4,439,610, Cl. 548-469.000.
Yeager, Patrick F.: *See*—
Kaufman, John W.; Stape, William J.; and Yeager, Patrick F., 4,439,000, Cl. 339-176.0MP.
Yeakey, Ernest L.; Cuscurida, Michael; and Brennan, Michael E., to Texaco, Inc. Packaging foam polyurethane composition employing novel polyol blend. 4,439,551, Cl. 521-131.000.
Yissum Research Development Company of the Hebrew University of Jerusalem: *See*—
Baniel, Avraham M.; and Eyal, Aharon M., 4,439,408, Cl. 423-321.00S.
Yokoi, Gunpei; and Okada, Satoru, to Nintendo Co., Ltd. Timepiece apparatus having a game function. 4,438,926, Cl. 273-85.00G.
Yokoya, Satoshi, to Sony Corporation. Dividing circuit. 4,439,696, Cl. 307-494.000.
York, Theodore H.; and Moates, Roger D., to Westinghouse Electric Corp. Dual mode meter reading apparatus. 4,439,764, Cl. 340-870.020.
Yoshida Kogyo K. K.: *See*—
Oda, Kiyoshi, 4,438,550, Cl. 70-57.000.
Yoshida, Kunio, to Sharp Kabushiki Kaisha. Electronic translator. 4,439,836, Cl. 364-900.000.
Yoshida, Minoru. X-Ray photograph unit. 4,439,867, Cl. 378-96.000.

Yoshida, Minoru: *See*—
Yaotani, Koichi; Yoshida, Minoru; and Sato, Seiichi, 4,438,894, Cl. 248-73.000.

Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,439,790, Cl. 358-256.000.

Yoshida, Takao: *See*—
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,439,354, Cl. 252-522.00R.

Yoshikawa, Hirofumi: *See*—
Kanai, Tamaki; Yoshikawa, Hirofumi; Yamagishi, Takashi; Suzuki, Kenji; and Ohta, Yoshikatsu, 4,439,479, Cl. 428-148.000.

Yoshikumi, Chikao: *See*—
Muto, Shigeaki; Niimura, Kouichi; Ando, Takao; Fujii, Masahiko; Furusho, Takao; and Yoshikumi, Chikao, 4,439,434, Cl. 424-246.000.

Yoshimaru, Tomohisa; Yamashita, Mitsuo; and Daigo, Junichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Recording tape for use in a recording and reproducing apparatus. 4,439,797, Cl. 360-134.000.

Yoshimi, Isao: *See*—
Osakabe, Kuniharu; Yoshimi, Isao; and Fukuda, Kyohei, 4,439,710, Cl. 313-414.000.

Yoshimoto, Akihiro: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Ishikura, Tomoyuki; Yoshimoto, Akihiro; Matsuzawa, Yasue; and Takatsuki, Yukio, 4,439,603, Cl. 536-6.400.

Yoshimoto, Toshio: *See*—
Abe, Masaru; Miyoshi, Isao; Tezuka, Toshiro; and Yoshimoto, Toshio, 4,438,796, Cl. 152-353.00R.

Yoshino Kogyosho Co., Ltd.: *See*—
Saito, Tadao; Akutsu, Masao; Sugiura, Hiroaki; and Endo, Shuzo, 4,439,393, Cl. 264-532.000.

Yoshioka, Kenji: *See*—
Komatsu, Hiroaki; and Yoshioka, Kenji, 4,439,749, Cl. 334-7.000.

Young, James G.: *See*—
Tsau, Josef H.; and Young, James G., 4,439,460, Cl. 426-548.000.

Young, Rodney C.: *See*—
Jones, Martin; and Young, Rodney C., 4,439,437, Cl. 424-263.000.

Youngblood, Donald A.: *See*—
Sullivan, John L., Jr.; Pearson, Robert D.; and Youngblood, Donald A., 4,438,698, Cl. 101-287.000.

Yu, Chia-Nien: *See*—
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,439,608, Cl. 546-283.000.

Zablen, Marshall A. Ambulatory apparatus for use in combination with an intravenous delivery system. 4,438,763, Cl. 128-133.000.

Zacharias, Alfred: *See*—
Poulsen, Martin E.; Vratny, Frederick; and Zacharias, Alfred, 4,439,870, Cl. 378-143.000.

Zahnradfabrik Friedrichshafen, AG: *See*—
Lang, Armin; and Knodler, Helmut, 4,438,679, Cl. 91-370.000.
Lang, Armin, 4,438,827, Cl. 180-143.000.

Zama, Hideo: *See*—
Shiroishi, Yoshihiro; Fujiwara, Hideo; Kimura, Takeshi; Kumasaka, Noriyuki; Kobayashi, Nobuo; Yamashita, Takeo; Tamura, Teizo; Zama, Hideo; Kudo, Mitsuhiro; and Iimura, Tsutomu, 4,439,794, Cl. 360-127.000.

Zanol, Elmar: *See*—
Oesterle, Gerhard; Jaeger, Rudolf; Hutter, Wilhelm; and Zanol, Elmar, 4,438,791, Cl. 139-453.000.

Zapp, Reinhold: *See*—
Link, Gerhard; Jung, Siegfried; Zapp, Reinhold; Bar, Helmut; and Mader, Herbert, 4,438,730, Cl. 122-40.000.

Zavaglia, Angelo J.: *See*—
Rodriguez, Thomas A.; and Zavaglia, Angelo J., 4,439,085, Cl. 414-447.000.

Zaweski, Edward F., to Ethyl Corporation. Lubricant composition containing mixed fatty acid ester and amide of diethanolamine. 4,439,336, Cl. 252-32.70E.

Zaydel, Wieslaw S.; Aldikacti, Hulki; and Bouck, James G., to General Motors Corporation. Method and apparatus for plastic body panel attachment. 4,438,971, Cl. 296-191.000.

Zehntel, Inc.: *See*—
Petersen, Gerald W., 4,439,858, Cl. 371-20.000.

Zehren, James N., to TRW Inc. Apparatus for use in energizing submergible pumping equipment in underwater wells. 4,438,996, Cl. 339-40.000.

Zeijlmans, Jan W.: *See*—
Hoogendoorn, Bastiaan; van Schagen, Nicolaas L.; van den Bemt, Johannes C. A.; and Zeijlmans, Jan W., 4,439,049, Cl. 374-124.000.

Zeiler, Kenneth T., to Mead Corporation, The. Ink jet charge electrode protection circuit. 4,439,776, Cl. 346-75.000.

Zellweger Uster Ltd.: *See*—
Grunder, Werner, 4,438,548, Cl. 19-105.000.

Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Preparation of trans cyclohexane 1,4-diisocyanate. 4,439,370, Cl. 260-453.00P.

Zenith Radio Corporation: *See*—
Alvite, Armando; Hines, Enrico D.; and Kautz, Allan D., 4,439,735, Cl. 324-404.000.

Zielke, Clyde W.: *See*—
Sudbury, John D.; and Zielke, Clyde W., 4,439,304, Cl. 208-8.0LE.

Ziemer, John H.: *See*—
Olszewski, Walter J.; Pahade, Ravindra F.; and Ziemer, John H., 4,439,220, Cl. 62-31.000.

Zimmerman, John C., to Halliburton Company. Hydraulic set high temperature isolation packer. 4,438,933, Cl. 277-9.500.

Ziph, Benjamin: *See*—
Meijer, Roelf J.; Brown, Robert J.; and Ziph, Benjamin, 4,439,169, Cl. 464-170.000.

Zison, Stanley W.; and Turer, Robert N., to Getty Synthetic Fuels, Inc. Dynamic pressure attenuator and method. 4,438,883, Cl. 239-553.300.

Zodrow, Rudolf; Hoveler, Egon; and Rosenberg, Heinz-Jurgen, to Jagenberg AG. Labeling station for articles like bottles. 4,439,262, Cl. 156-364.000.

Zolotovsky, Anatoly I.: *See*—
Shimanovich, Vladimir D.; Shipai, Andrei K.; Davydenko, Vladimir G.; Kiselevsky, Leonid I.; Korotkevich, Sergei G.; Lipnitskaya, Nelli I.; Machnev, Vyacheslav P.; Zolotovsky, Anatoly I.; Moskovsky, Vladislav G.; and Naumenko, Nikolai N., 4,439,657, Cl. 219-121.0PR.

Zuckerman, Andrew M.: *See*—
Zuckerman, Jack M.; and Zuckerman, Andrew M., 4,438,874, Cl. 223-88.000.

Zuckerman, Jack M.; and Zuckerman, Andrew M. Unitary garment hanger system. 4,438,874, Cl. 223-88.000.

Zurer, August: *See*—
Marfurt, Hans-Rudolf; and Zurer, August, 4,439,290, Cl. 204-149.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF MARCH, 1984

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bank, Howard M.; and Michael, Keith W., to Dow Corning Corporation. Curable compositions. Re. 31,543, Cl. 523-435.000.

Dennison Manufacturing Company: *See*—
Wood, William E., Re. 31,541, Cl. 24-16.0PB.

Dow Corning Corporation: *See*—
Bank, Howard M.; and Michael, Keith W., Re. 31,543, Cl. 523-435.000.

Hedberg, John B. G., to Thermal Dynamics Corporation. Current unit for arc welding. Re. 31,544, Cl. 219-130.210.

Hetrick, Glenn C. Safety attachment for lawn mowers. Re. 31,542, Cl. 56-295.000.

Michael, Keith W.: *See*—
Bank, Howard M.; and Michael, Keith W., Re. 31,543, Cl. 523-435.000.

Quinn, Patrick A., to Tektronix, Inc. Feed-forward amplifier. Re. 31,545, Cl. 330-149.000.

Tektronix, Inc.: *See*—
Quinn, Patrick A., Re. 31,545, Cl. 330-149.000.

Thermal Dynamics Corporation: *See*—
Hedberg, John B. G., Re. 31,544, Cl. 219-130.210.

Wood, William E., to Dennison Manufacturing Company. Webbed harnessing device. Re. 31,541, Cl. 24-16.0PB.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Amp Incorporated: *See*—
Hughes, Donald W. K.; and Myers, Ronald W., B1 4,210,376, Cl. 339-17.0LC.

Bayer Aktiengesellschaft: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Bodendorf, Warren J.; and Presto, Alphonse R., to Texon Inc. Decay resistant material. B1 4,337,117, 3-27-84, Cl. 162-161.000.

Burns Bros.: *See*—
Martinelli, Rene J., B1 4,321,956, Cl. 152-222.000.

Cohen, Charles A.; and Muessig, Clifford W., to Esso Research and Engineering Company. Jet and rocket fuel. B1 3,381,046, 3-27-84, Cl. 585-253.000.

Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., to International Business Machines Corporation. Serial storage interface apparatus for coupling a serial storage mechanism to a data processor input/output bus. B1 4,344,132, 3-27-84, Cl. 364-200.000.

Eimer, Johannes: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Esso Research and Engineering Company: *See*—
Cohen, Charles A.; and Muessig, Clifford W., B1 3,381,046, Cl. 585-253.000.

Farrell, Robert H.: *See*—
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., B1 4,344,132, Cl. 364-200.000.

GTE Products Corp.: *See*—
Kane, Hugh; and Oellerich, Bruce A., B1 4,184,134, Cl. 335-198.000.

Hughes, Donald W. K.; and Myers, Ronald W., to Amp Incorporated. Electrical connector receptacle. B1 4,210,376, 3-27-84, Cl. 339-17.0LC.

International Business Machines Corporation: *See*—
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., B1 4,344,132, Cl. 364-200.000.

Kane, Hugh; and Oellerich, Bruce A., to GTE Products Corp. Electrical switching apparatus having convertible contact structure. B1 4,184,134, 3-27-84, Cl. 335-198.000.

Koperda, Francis R.: *See*—
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., B1 4,344,132, Cl. 364-200.000.

Liebsch, Dietrich: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Martinelli, Rene J., to Burns Bros. Belt attachment for tire chains. B1 4,321,956, 3-27-84, Cl. 152-222.000.

Muessig, Clifford W.: *See*—
Cohen, Charles A.; and Muessig, Clifford W., B1 3,381,046, Cl. 585-253.000.

Myers, Ronald W.: *See*—
Hughes, Donald W. K.; and Myers, Ronald W., B1 4,210,376, Cl. 339-17.0LC.

Oellerich, Bruce A.: *See*—
Kane, Hugh; and Oellerich, Bruce A., B1 4,184,134, Cl. 335-198.000.

Presto, Alphonse R.: *See*—
Bodendorf, Warren J.; and Presto, Alphonse R., B1 4,337,117, Cl. 162-161.000.

Raab, Rainer: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

Texon Inc.: *See*—
Bodendorf, Warren J.; and Presto, Alphonse R., B1 4,337,117, Cl. 162-161.000.

Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, to Bayer Aktiengesellschaft. Process for the production of polyisocyanates with a biuret structure. B1 3,976,622, 3-27-84, Cl. 528-67.000.

Zirner, Joachim: *See*—
Wagner, Kuno; Eimer, Johannes; Zirner, Joachim; Raab, Rainer; and Liebsch, Dietrich, B1 3,976,622, Cl. 528-67.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Wilkinson, Kenneth E.; and Balistreri, Thomas W., 273,227, Cl. D24-48.000.

Abbott, Thomas R. Tie down device. 273,176, 3-27-84, Cl. D8-356.000.

Adamson, Gerhard; and Voorhees, Earl W., Jr. Grocery bag holding rack. 273,159, 3-27-84, Cl. D6-85.000.

Almela, Jose C. Cradle. 273,154, 3-27-84, Cl. D6-15.000.

Anderson, Richard: *See*—
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Antonacci, Frank; and Carluccio, Ronald. Blow dryer. 273,239, 3-27-84, Cl. D28-13.000.

Antonacci, Frank; and Carluccio, Ronald. Blow dryer. 273,240, 3-27-84, Cl. D28-13.000.

Apple Computer, Inc.: *See*—
Oyama, Terrell A.; and Stirling, Loren D., 273,191, Cl. D14-113.000.

Argandona, Augusto, to Quaker Oats Company, The. Toy dish drainer. 273,214, 3-27-84, Cl. D21-121.000.

Atobe, Takashi; and Iinuma, Kanji, to Daiwa Seiko, Inc. Reel for fishing. 273,218, 3-27-84, Cl. D22-25.000.
Bailly, Francois, to Equipements Automobiles Marchal. Headlight cover. 273,236, 3-27-84, Cl. D26-139.000.
Baisch, Herbert: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 273,195, Cl. D15-141.000.
Baker, Robert L., to Keystone Consolidated Industries, Inc. Display sign strip. 273,204, 3-27-84, Cl. D20-44.000.
Balistreri, Thomas W.: *See*—
Wilkinson, Kenneth E.; and Balistreri, Thomas W., 273,227, Cl. D24-48.000.
Barnsfather, Gebus: *See*—
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,197, Cl. D15-148.000.
Baumgartner, Robert L.: *See*—
Taylor, Albert K.; and Baumgartner, Robert L., 273,238, Cl. D28-7.000.
Bayerische Motoren Werke A.G.: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,234, Cl. D26-35.000.
Beerens, Cornelis J. M. Saw sharpening guide. 273,174, 3-27-84, Cl. D8-71.000.
Benson, David L. Aircraft console. 273,150, 3-27-84, Cl. D3-40.000.
Bisson, Nicole, to Salon Nicole Bisson Inc. Hair pin. 273,241, 3-27-84, Cl. D28-40.000.
Bohnas, Robert D.: *See*—
Martinez, Robert A.; and Bohnas, Robert D., 273,230, Cl. D25-49.000.
Bone, Arnold R., to Dennison Manufacturing Company. Dispensing device for fasteners. 273,171, 3-27-84, Cl. D8-49.000.
Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., to Raytheon Company. Microwave pizza maker utensil. 273,168, 3-27-84, Cl. D7-354.000.
Braddon, George B. Food packaging tray. 273,181, 3-27-84, Cl. D9-425.000.
Braun, Hans: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,234, Cl. D26-35.000.
Brian Davis & Company Proprietary Limited: *See*—
Carlson, Arthur R., 273,167, Cl. D7-79.000.
Brorsson, Jan-Erik. Lockable quick foot for vehicle racks. 273,187, 3-27-84, Cl. D12-157.000.
Bruning, Richard P., to General Motors Corporation. Vehicle. 273,186, 3-27-84, Cl. D12-85.000.
Canon Denshi Kabushiki Kaisha: *See*—
Yoshida, Shigeru, 273,192, Cl. D14-114.000.
Canon Kabushiki Kaisha: *See*—
Yoshida, Shigeru, 273,192, Cl. D14-114.000.
Caputo, Jackie: *See*—
Dubbin, Barbara; and Caputo, Jackie, 273,156, Cl. D6-47.000.
Dubbin, Barbara; and Caputo, Jackie, 273,158, Cl. D6-61.000.
Carlson, Arthur R., to Brian Davis & Company Proprietary Limited. Canister. 273,167, 3-27-84, Cl. D7-79.000.
Carluccio, John F. Cosmetic jar. 273,180, 3-27-84, Cl. D9-352.000.
Carluccio, Ronald: *See*—
Antonacci, Frank; and Carluccio, Ronald, 273,239, Cl. D28-13.000.
Antonacci, Frank; and Carluccio, Ronald, 273,240, Cl. D28-13.000.
Casa Bella Imports, Inc.: *See*—
Dubbin, Barbara; and Caputo, Jackie, 273,156, Cl. D6-47.000.
Dubbin, Barbara; and Caputo, Jackie, 273,158, Cl. D6-61.000.
Ciganko, David J., to Quaker Oats Company, The. Toy carrier. 273,209, 3-27-84, Cl. D21-59.000.
Clanton, W. Porter, to Quaker Oats Company, The. Toy carrier. 273,207, 3-27-84, Cl. D21-59.000.
Combi, Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, 273,210, Cl. D21-64.000.
Commercial Mailing Accessories, Inc.: *See*—
Oglander, Allen H.; and Shannon, Richard E., 273,202, Cl. D18-19.000.
Cotton, Sammy. Building structure. 273,228, 3-27-84, Cl. D25-1.000.
Croizyveuve Daignas, Anne Marie Y. Rotary element of plastering machine. 273,198, 3-27-84, Cl. D15-199.000.
Daiwa Seiko, Inc.: *See*—
Atobe, Takashi; and Iinuma, Kanji, 273,218, Cl. D22-25.000.
Iinuma, Kanji, 273,219, Cl. D22-25.000.
Iinuma, Kanji; and Nakamura, Hideo, 273,220, Cl. D22-25.000.
Iinuma, Kanji, 273,221, Cl. D22-25.000.
Davis, Robert P.: *See*—
Katz, Ira R.; and Davis, Robert P., 273,151, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 273,152, Cl. D3-71.000.
Dennison Manufacturing Company: *See*—
Bone, Arnold R., 273,171, Cl. D8-49.000.
Dubbin, Barbara; and Caputo, Jackie, to Casa Bella Imports, Inc. Armless sofa. 273,156, 3-27-84, Cl. D6-47.000.
Dubbin, Barbara; and Caputo, Jackie, to Casa Bella Imports, Inc. Open curved sofa. 273,158, 3-27-84, Cl. D6-61.000.
Dunlap, Jerald V., to M-D & Co. Packaged air inflator set. 273,178, 3-27-84, Cl. D15-7.000.
Duo-Fast Corporation: *See*—
Radtke, Lee F., 273,196, Cl. D15-147.000.
Equipements Automobiles Marchal: *See*—
Bailly, Francois, 273,236, Cl. D26-139.000.
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Power tool table. 273,195, 3-27-84, Cl. D15-141.000.
Ferrari, Paolo, to Zether Limited. Kite. 273,211, 3-27-84, Cl. D21-88.000.
Fifield, Bruce. Carrying case. 273,149, 3-27-84, Cl. D3-30.100.
Fogarty, A. Edward; and Fogarty, Bonnie R. Toy picture frame or similar article. 273,208, 3-27-84, Cl. D21-59.000.
Fogarty, Bonnie R.: *See*—
Fogarty, A. Edward; and Fogarty, Bonnie R., 273,208, Cl. D21-59.000.
Gannett Co., Inc.: *See*—
Gore, Fred M., 273,203, Cl. D20-6.000.
General Motors Corporation: *See*—
Bruning, Richard P., 273,186, Cl. D12-85.000.
Gore, Fred M., to Gannett Co., Inc. Newspaper vending rack or similar article. 273,203, 3-27-84, Cl. D20-6.000.
Halme, Matti. Pupil'desk. 273,163, 3-27-84, Cl. D6-181.000.
Halverson, Lance K. Rack or similar article. 273,162, 3-27-84, Cl. D6-125.000.
Hartmann Luggage Company: *See*—
Katz, Ira R.; and Davis, Robert P., 273,151, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 273,152, Cl. D3-71.000.
Hawaiian Motor Company: *See*—
Rahe, Jon A.; and Motruk, John, 273,169, Cl. D8-8.000.
Hirsh Company: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 273,195, Cl. D15-141.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ogishima, Tetsuo, 273,235, Cl. D26-35.000.
Horvath, Tibor, to Lazere Financial Corporation. Filter. 273,223, 3-27-84, Cl. D23-4.000.
House, Harold. Tool for cutting the inside of plastic pipes. 273,194, 3-27-84, Cl. D15-139.000.
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, to Reliance Electric Company. Variable speed belt drive. 273,197, 3-27-84, Cl. D15-148.000.
Hunter Douglas Industries, B.V.: *See*—
Norgate, Robert B., 273,133, Cl. D25-92.000.
Iinuma, Kanji, to Daiwa Seiko, Inc. Reel for fishing. 273,219, 3-27-84, Cl. D22-25.000.
Iinuma, Kanji; and Nakamura, Hideo, to Daiwa Seiko, Inc. Reel for fishing. 273,220, 3-27-84, Cl. D22-25.000.
Iinuma, Kanji, to Daiwa Seiko, Inc. Reel for fishing. 273,221, 3-27-84, Cl. D22-25.000.
Iinuma, Kanji: *See*—
Atobe, Takashi; and Iinuma, Kanji, 273,218, Cl. D22-25.000.
Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, 273,210, Cl. D21-64.000.
Ishiyama, Atsushi, to Yamaha Hatsudoki Kabushiki Kaisha. Snowmobile. 273,185, 3-27-84, Cl. D12-7.000.
Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 273,151, 3-27-84, Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 273,152, 3-27-84, Cl. D3-71.000.
Keystone Consolidated Industries, Inc.: *See*—
Baker, Robert L., 273,204, Cl. D20-44.000.
Kido, Katsutoshi; and Usami, Satoru, to Matsushita Electric Industrial Co., Ltd. Combined radio and cassette tape recorder. 273,188, 3-27-84, Cl. D14-5.000.
King, Harold. Solar panel. 273,224, 3-27-84, Cl. D23-72.000.
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, to Paradyne Corporation. Display terminal. 273,189, 3-27-84, Cl. D14-106.000.
Koves, Thomas. Inflatable foldable cushion. 273,166, 3-27-84, Cl. D6-201.000.
Krome, Edward F., Jr.: *See*—
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,197, Cl. D15-148.000.
La Compagnie Nationale Air France: *See*—
Staub, Lucien, 273,157, Cl. D6-48.000.
Lazere Financial Corporation: *See*—
Horvath, Tibor, 273,223, Cl. D23-4.000.
Lippe, Claude: *See*—
Lippe, Michel; Lippe, Claude; and Lippe, Jacques, 273,229, Cl. D25-2.000.
Lippe, Jacques: *See*—
Lippe, Michel; Lippe, Claude; and Lippe, Jacques, 273,229, Cl. D25-2.000.
Lippe, Michel; Lippe, Claude; and Lippe, Jacques. Swimming pool. 273,229, 3-27-84, Cl. D25-2.000.
Lujan, Ysauro B., Jr. Air rescue carrier. 273,243, 3-27-84, Cl. D34-28.000.
Luthe, Claus; Rennen, Manfred; and Braun, Hans, to Bayerische Motoren Werke A.G. Tail light for automobile. 273,234, 3-27-84, Cl. D26-35.000.
M-D & Co.: *See*—
Dunlap, Jerald V., 273,178, Cl. D15-7.000.
Martel, Thomas J.: *See*—
Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., 273,168, Cl. D7-354.000.
Martinez, Robert A.; and Bohnas, Robert D., to Martinez, Robert A. Garage door. 273,230, 3-27-84, Cl. D25-49.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kido, Katsutoshi; and Usami, Satoru, 273,188, Cl. D14-5.000.
Matthews, Mark A. Foldable display stand or the like. 273,164, 3-27-84, Cl. D6-186.000.

Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Mobile maintenance cart. 273,242, 3-27-84, Cl. D34-21.000.

Moreland, Ralph E. Combined holder and dispenser for tissue paper rolls. 273,160, 3-27-84, Cl. D6-97.000.

Motruk, John: *See*—
Rahe, Jon A.; and Motruk, John, 273,169, Cl. D8-8.000.

Nakamura, Hideo: *See*—
Iinuma, Kanji; and Nakamura, Hideo, 273,220, Cl. D22-25.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, to Combi, Co., Ltd. Toy trumpet. 273,210, 3-27-84, Cl. D21-64.000.

Niemann, Jeffrey. Fish handling device. 273,222, 3-27-84, Cl. D22-31.000.

Norgate, Robert B., to Hunter Douglas Industries, B.V. Roofing tile. 273,233, 3-27-84, Cl. D25-92.000.

Ogishima, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle headlight. 273,235, 3-27-84, Cl. D26-35.000.

Oglander, Allen H.; and Shannon, Richard E., to Commercial Mailing Accessories, Inc. Label dispenser. 273,202, 3-27-84, Cl. D18-19.000.

Ohie, Yoshihisa, to Sharp Corporation. Computer. 273,190, 3-27-84, Cl. D14-106.000.

Oyama, Terrell A.; and Stirling, Loren D., to Apple Computer, Inc. Computer data display monitor. 273,191, 3-27-84, Cl. D14-113.000.

Palson, Richard C. J., to Woodlets, Inc. Air freshener housing. 273,225, 3-27-84, Cl. D23-150.000.

Paradyne Corporation: *See*—
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Perimet, Inc.: *See*—
Stowe, John K., 273,193, Cl. D15-133.000.

Petitt, Donald C. Arm chair. 273,155, 3-27-84, Cl. D6-31.000.

Plough, Inc.: *See*—
Taylor, Albert K.; and Baumgartner, Robert L., 273,238, Cl. D28-7.000.

Pollack, Wayne I.: *See*—
Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., 273,168, Cl. D7-354.000.

Poon, Tit-Wing. Car polisher. 273,173, 3-27-84, Cl. D8-62.000.

Quaker Oats Company, The: *See*—
Argandona, Augusto, 273,214, Cl. D21-121.000.
Ciganko, David J., 273,209, Cl. D21-59.000.
Clanton, W. Porter, 273,207, Cl. D21-59.000.
Sahler, John T., 273,205, Cl. D21-59.000.
Sahler, John T., 273,206, Cl. D21-59.000.
Sahler, John T., 273,212, Cl. D21-120.000.
Sahler, John T., 273,215, Cl. D21-150.000.
Simmons, Carl J., 273,213, Cl. D21-121.000.

Radtke, Lee F., to Duo-Fast Corporation. Feeder housing. 273,196, 3-27-84, Cl. D15-147.000.

Rahe, Jon A.; and Motruk, John, to Hawaiian Motor Company. Cutting head of a weed cutter of the type using a rotating cutting string. 273,169, 3-27-84, Cl. D8-8.000.

Raytheon Company: *See*—
Bowen, Robert F.; Martel, Thomas J.; and Pollack, Wayne I., 273,168, Cl. D7-354.000.

Reliance Electric Company: *See*—
Huff, Robert O.; Krome, Edward F., Jr.; and Barnsfather, Gebus, 273,197, Cl. D15-148.000.

Rennen, Manfred: *See*—
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 273,234, Cl. D26-35.000.

Riedell, Edwin H. Single use catheter device. 273,226, 3-27-84, Cl. D24-54.000.

Roberts, James A. Decorative molding strip. 273,232, 3-27-84, Cl. D25-79.000.

Rubbermaid Commercial Products Inc.: *See*—
Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., 273,242, Cl. D34-21.000.

Ruckman, Harold: *See*—
Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., 273,242, Cl. D34-21.000.

Sahler, John T., to Quaker Oats Company, The. Toy bar magnet. 273,205, 3-27-84, Cl. D21-59.000.

Sahler, John T., to Quaker Oats Company, The. Toy horseshoe magnet. 273,206, 3-27-84, Cl. D21-59.000.

Sahler, John T., to Quaker Oats Company, The. Toy tape measure. 273,212, 3-27-84, Cl. D21-120.000.

Sahler, John T., to Quaker Oats Company, The. Action pull toy. 273,215, 3-27-84, Cl. D21-150.000.

Sakata, Keiji, to Sharp Corporation. Electronic calculator with solar batteries. 273,200, 3-27-84, Cl. D18-7.000.

Sakata, Keiji, to Sharp Corporation. Electronic calculator. 273,201, 3-27-84, Cl. D18-7.000.

Salon Nicole Bisson Inc.: *See*—
Bisson, Nicole, 273,241, Cl. D28-40.000.

Sanwa Cutlery Ltd.: *See*—
Yamagishi, Masami, 273,172, Cl. D8-57.000.

Sato, Hisao. Paper clip driver and applicator. 273,170, 3-27-84, Cl. D8-49.000.

Sawada, Masaji, to Sharp Corporation. Calculator with printer. 273,199, 3-27-84, Cl. D18-7.000.

Shane, Claudia A.: *See*—
Shane, William B.; and Shane, Claudia A., 273,182, Cl. D11-157.000.
Shane, William B.; and Shane, Claudia A., 273,183, Cl. D11-157.000.

Shane, William B.; and Shane, Claudia A. Tea pot simulating thimble. 273,182, 3-27-84, Cl. D11-157.000.

Shane, William B.; and Shane, Claudia A. Coffee pot simulating thimble. 273,183, 3-27-84, Cl. D11-157.000.

Shannon, Richard E.: *See*—
Oglander, Allen H.; and Shannon, Richard E., 273,202, Cl. D18-19.000.

Sharp Corporation: *See*—
Ohie, Yoshihisa, 273,190, Cl. D14-106.000.
Sakata, Keiji, 273,200, Cl. D18-7.000.
Sakata, Keiji, 273,201, Cl. D18-7.000.
Sawada, Masaji, 273,199, Cl. D18-7.000.

Shore, Sydney. Packaging container for a ribbon cartridge. 273,179, 3-27-84, Cl. D9-346.000.

Simmons, Carl J., to Quaker Oats Company, The. Toy tray. 273,213, 3-27-84, Cl. D21-121.000.

Sinrod, Harold S. Multi-purpose defense baton. 273,216, 3-27-84, Cl. D22-1.000.

Staub, Lucien, to La Compagnie Nationale Air France. Aircraft seat. 273,157, 3-27-84, Cl. D6-48.000.

Sternberg, Steven. Electronic game stand. 273,165, 3-27-84, Cl. D6-188.000.

Stirling, Loren D.: *See*—
Oyama, Terrell A.; and Stirling, Loren D., 273,191, Cl. D14-113.000.

Stowe, John K., to Perimet, Inc. Gage bar for miter cutting machine. 273,193, 3-27-84, Cl. D15-133.000.

Suarez, Jorge: *See*—
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Suckno, Abraham. Spiral stairway. 273,231, 3-27-84, Cl. D25-62.000.

Sugita, Kuniko: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Sugita, Kuniko, 273,210, Cl. D21-64.000.

Swenson, Armand. Gun sight. 273,217, 3-27-84, Cl. D22-8.000.

Sylvan, Richard: *See*—
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 273,195, Cl. D15-141.000.

Taylor, Albert K.; and Baumgartner, Robert L., to Plough, Inc. Eye makeup applicator. 273,238, 3-27-84, Cl. D28-7.000.

Tcherneshoff Associates, Inc.: *See*—
Tcherneshoff, John K., 273,177, Cl. D8-382.000.

Tcherneshoff, John K., to Tcherneshoff Associates, Inc. Tamper-proof fastening device for tags and the like. 273,177, 3-27-84, Cl. D8-382.000.

Tippett, Pete A. Device for sorting tobacco leaves and the like. 273,237, 3-27-84, Cl. D27-51.000.

Tomblin, Glen E.: *See*—
Maza, Dale T.; Ruckman, Harold; and Tomblin, Glen E., 273,242, Cl. D34-21.000.

Usami, Satoru: *See*—
Kido, Katsutoshi; and Usami, Satoru, 273,188, Cl. D14-5.000.

Voorhees, Earl W., Jr.: *See*—
Adamson, Gerhard; and Voorhees, Earl W., Jr., 273,159, Cl. D6-85.000.

Wabeke, Paul E. Flag or similar article. 273,184, 3-27-84, Cl. D11-173.000.

Wagner, Eugene C. Toothbrush. 273,153, 3-27-84, Cl. D4-28.000.

Weber, Lee E. Towel rack. 273,161, 3-27-84, Cl. D6-100.000.

Wilkinson, Kenneth E.; and Balistreri, Thomas W., to Abbott Laboratories. Pull ring port cap for a medical fluid container. 273,227, 3-27-84, Cl. D24-48.000.

Wissman, Thomas: *See*—
Korzik, James L.; Wissman, Thomas; Anderson, Richard; and Suarez, Jorge, 273,189, Cl. D14-106.000.

Woodlets, Inc.: *See*—
Palson, Richard C. J., 273,225, Cl. D23-150.000.

Yamagishi, Masami, to Sanwa Cutlery Ltd. Thread nipper or the like. 273,172, 3-27-84, Cl. D8-57.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Ishiyama, Atsushi, 273,185, Cl. D12-7.000.

Yoshida, Shigeru, to Canon Kabushiki Kaisha; and Canon Denshi Kabushiki Kaisha. Cartridge for magnetic disc. 273,192, 3-27-84, Cl. D14-114.000.

Zether Limited: *See*—
Ferrari, Paolo, 273,211, Cl. D21-88.000.

Ziaylek, Theodore, Jr. Wall and ceiling hook tool head, for use in fighting fires. 273,175, 3-27-84, Cl. D8-81.000.

LIST OF PLANT PATENTEES

Hansen, Betty C., successor: *See*—
Hansen, Carl J., deceased, 5,210, Cl. 30.000.

Hansen, Carl J., deceased (by Hansen, Betty C., successor), to University of California, The Regents of the. Almond × peach hybrid rootstock tree (Hansen 2168). 5,210, 3-27-84, Cl. 30.000.

Jost, Donald J. Nectarine tree, "Summer Red". 5,211, 3-27-84, Cl. 41.000.

Monrovia Nursery Company: *See*—
Usrey, William B., 5,212, Cl. 54.000.

University of California, The Regents of the: *See*—
Hansen, Carl J., deceased, 5,210, Cl. 30.000.

Usrey, William B., to Monrovia Nursery Company. *Raphiolepis indica* cv. Monruce. 5,212, 3-27-84, Cl. 54.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 27, 1984

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.1 R 4,438,531
16 4,438,532
97 4,438,533

CLASS 4

227 4,438,534
234 4,438,535
343 4,438,536
492 4,438,537

CLASS 7

164 4,438,538

CLASS 8

436 4,439,201
471 4,439,202
496 4,439,203
497 4,439,204
527 4,439,205
543 4,439,206
556 4,439,208
639 4,439,207

CLASS 10

120.5 R 4,438,539

CLASS 15

119 A 4,438,540
167 R 4,438,541
250.42 4,438,543

CLASS 16

85 4,438,544

CLASS 17

49 4,438,545
50 4,438,546

CLASS 19

98 4,438,547
105 4,438,548
107 4,438,549

CLASS 24

16 PB Re.31,541
68 SB 4,438,551
297 4,438,552

CLASS 28

184 4,438,553

CLASS 29

57 4,438,554
505 4,438,555
576 B 4,438,556
4,438,557
732 4,438,558
740 4,438,559
830 4,438,560
831 4,438,561

CLASS 30

99 4,438,562
156 4,438,563
324 4,438,564
341 4,438,565

CLASS 33

178 R 4,438,566
286 4,438,567
348 4,438,568
438 4,438,569

CLASS 34

1 4,438,570
65 4,438,571
218 4,438,572

CLASS 36

3 B 4,438,573
45 4,438,574

CLASS 37

4 4,438,575
98 4,438,576

CLASS 38

107 4,438,577

CLASS 40

152 4,438,578
160 4,438,579
590 4,438,580

CLASS 42

94 4,438,581

CLASS 43

27.4 4,438,582
42.06 4,438,583
58 4,438,584
113 4,438,585

CLASS 46

1 R 4,438,586
44 4,438,587
228 4,438,588
251 4,438,589
257 4,438,590

CLASS 47

1.4 4,438,591
1.5 4,438,592
57.6 4,438,593

CLASS 48

76 4,439,209
202 4,439,210

CLASS 49

177 4,438,594
219 4,438,595
463 4,438,596
501 4,438,597

CLASS 51

165.73 4,438,598
238 S 4,438,599
241 S 4,438,600
262 A 4,438,601
277 4,438,602

CLASS 52

8 4,438,603
28 4,438,604
71 4,438,605
79.1 4,438,606
126.1 4,438,607
187 4,438,608
208 4,438,609
263 4,438,610
309.2 4,438,611
427 4,438,612
484 4,438,613
580 4,438,614
648 4,438,615
650 4,438,616

CLASS 53

137 4,438,617
430 4,438,618

CLASS 55

1 4,439,211
27 4,439,212
31 4,439,213
74 4,439,214
95 4,439,215
104 4,439,216
158 4,439,217
288 4,439,218
499 4,439,219

CLASS 56

119 4,438,619
295 Re.31,542
332 4,438,620

CLASS 57

22 4,438,621
261 4,438,622
275 4,438,623
352 4,438,624

CLASS 60

39.17 4,438,625
39.32 4,438,626
278 4,438,627
374 4,438,628
579 4,438,629
676 4,438,630

CLASS 62

6 4,438,631
31 4,439,220
55.5 4,438,632
116 4,438,633
123 4,438,634
305 4,438,635
325 4,438,636
457 4,438,637
500 4,438,638

CLASS 65

4.21 4,439,221
99.2 4,439,222

CLASS 66

64 4,438,639

CLASS 70

57 4,438,550
94 4,438,640
95 4,438,641
232 4,438,642

CLASS 71

30 4,439,223
76 4,439,224
88 4,439,225
92 4,439,226
95 4,439,227
4,439,228
96 4,439,229
4,439,230

CLASS 72

49 4,438,643
356 4,438,644
482 4,438,645

CLASS 73

105 4,438,646
117.3 4,438,647
195 4,438,648
432 R 4,438,649
432 SD 4,438,650
433 4,438,651
861.25 4,438,652
863.11 4,438,653
864.52 4,438,654

CLASS 74

5 F 4,438,655
63 4,438,656
477 4,438,657
501 R 4,438,658
529 4,438,659
531 4,438,660
551.9 4,438,661
625 4,438,662
760 4,438,663
866 4,438,664
867 4,438,665
868 4,438,666

CLASS 75

0.5 AA 4,439,231
10 R 4,439,232
35 4,439,233
52 4,439,234
101 R 4,439,235
123 B 4,439,236
243 4,439,237

CLASS 76

36 4,438,667

CLASS 81

352 4,438,668
410 R 4,438,669

CLASS 83

154 4,438,670
212 4,438,671
319 4,438,672
502 4,438,673

CLASS 84

1.24 4,438,674

CLASS 89

1.811 4,438,675
34 4,438,676
36 K 4,438,677
138 4,438,678

CLASS 91

370 4,438,679

CLASS 98

43 C 4,438,680

CLASS 99

323.2 4,438,681
323.7 4,438,682
330 4,438,683
341 4,438,684
342 4,438,685
353 4,438,686
571 4,438,687
574 4,438,688

CLASS 100

25 4,438,689
116 4,438,690
117 4,438,691

CLASS 101

93.04 4,438,692
129 4,438,693
152 4,438,694
153 4,438,695
180 4,438,696
183 4,438,697
287 4,438,698

CLASS 102

313 4,438,699
334 4,438,700

CLASS 104

172 B 4,438,701
4,438,702

CLASS 105

224.1 4,438,703

CLASS 106

20 4,439,238
287.16 4,439,239
288 Q 4,439,240

CLASS 109

44 4,438,704

CLASS 110

235 4,438,705
238 4,438,706
264 4,438,707
346 4,438,708
347 4,438,709

CLASS 111

3 4,438,710

CLASS 112

16 4,438,711
100 4,438,712
4,438,713
130 4,438,714
158 B 4,438,715
168 4,438,716
227 4,438,717
274 4,438,718

CLASS 114

74 A 4,438,719

CLASS 116

215 4,438,720

CLASS 118

249 4,438,721
657 4,438,722
718 4,438,723
719 4,438,724

CLASS 119

4 4,438,725
28 4,438,726
29 4,438,727

CLASS 122

14 4,438,728
26 4,438,729
40 4,438,730

CLASS 123

25 N 4,438,731
41.05 4,438,732
41.62 4,438,733
90.16 4,438,735
4,438,736
90.17 4,438,737
90.27 4,438,734
90.39 4,438,738
90.55 4,438,739
188 M 4,438,741
188 S 4,438,740
308 4,438,742
4,438,743
327 4,438,744
339 4,438,745
373 4,438,746
450 4,438,747
491 4,438,748
494 4,438,749
557 4,438,750
606 4,438,751
630 4,438,752

CLASS 124

24 R 4,438,753

CLASS 125

14 4,438,754

CLASS 126

34 4,438,755
131 4,438,756
360 R 4,438,757
419 4,438,758
433 4,438,759
438 4,438,760

CLASS 128

75 4,438,761
92 BB 4,438,762
133 4,438,763
205.22 4,438,764
303.1 4,438,765
303.14 4,438,766
304 4,438,767
305.3 4,438,768
334 R 4,438,769
637 4,438,770
671 4,438,771
715 4,438,772
748 4,438,773

CLASS 131

282 4,438,774
300 4,438,775
336 4,438,776

CLASS 134

22.17 4,439,241
25.2 4,439,242
33 4,439,243
4,439,244

CLASS 137

62 4,438,777
112 4,438,778
614.06 4,438,779
625.28 4,438,781
625.6 4,438,780
628 4,438,782

CLASS 138

89 4,438,783
92 4,438,784
103 4,438,785

CLASS 139

59 4,438,786
329 4,438,787
383 A 4,438,788
4,438,789
435 4,438,790
453 4,438,791

CLASS 141

95 4,438,792
382 4,438,793

CLASS 144

208 E 4,438,794
373 4,438,795

CLASS 148

1.5 4,439,245
2 4,439,246
4,439,247
6.2 4,439,248
9 R 4,439,249
23 4,439,250
31.55 4,439,251
111 4,439,252
403 4,439,253

CLASS 149

2 4,439,254

CLASS 152

222 B1,4,321,956
353 R 4,438,796
410 4,438,797

CLASS 156

49 4,439,255
50 4,439,256
64 4,439,257
86 4,439,258
245 4,439,259
259 4,439,260
345 4,439,261
364 4,439,262
497 4,439,263
556 4,439,264
606 4,439,265
614 4,439,266
4,439,267
626 4,439,268
643 4,439,269
644 4,439,270

CLASS 160

126 4,438,798
263 4,438,799
371 4,438,800

CLASS 162

19 4,439,271
30.11 4,439,272
161 B1 4,337,117
358 4,439,273

CLASS 164

130 4,438,801
443 4,438,802
472 4,438,803
522 4,438,804

CLASS 165

76 4,438,805
108 4,438,806
133 4,438,807
150 4,438,808
166 4,438,809

CLASS 166

65 M 4,438,810
123 4,438,811
173 4,438,812
177 4,438,813
273 4,438,814
278 4,438,815
303 4,438,816
341 4,438,817

CLASS 172

9 4,438,818
536 4,438,819

CLASS 174

21 R 4,439,630
74 R 4,439,631
106 D 4,439,632
106 R 4,439,633

CLASS 175

45 4,438,820
74 4,438,821
325 4,438,822

CLASS 177

210 EM 4,438,823

CLASS 178

22.08 4,438,824

CLASS 179

2.51 4,439,634
6.2 4,439,635
7.1 R 4,439,636
16 F 4,439,637
84 C 4,439,638
84 VF 4,439,639
110 A 4,439,640
111 R 4,439,641
4,439,642
146 E 4,439,643
4,439,644
156 R 4,439,645

CLASS 180

89.12 4,438,825
89.14 4,438,826
143 4,438,827
219 4,438,828

CLASS 182

150 4,438,829

CLASS 187

12 4,438,830
30 4,438,831

CLASS 188

73.45 4,438,832
320 4,438,833
322.16 4,438,834

CLASS 192

3 M 4,438,835
36 4,438,836

CLASS 198

345 4,438,839
398 4,438,840
524 4,438,841
735 4,438,837
838 4,438,842
853 4,438,838

CLASS 200

5 A 4,439,646
4,439,647
6 A 4,439,648
4,439,649
61.89 4,439,650
144 AP 4,439,651
148 A 4,439,652
153 SC 4,439,653
302.1 4,439,654
340 4,439,655

CLASS 201

41 4,439,274

CLASS 202

100 4,439,275
239 4,439,276
248 4,439,277

CLASS 203

9 4,439,278

CLASS 204

1.5 4,439,279
2 4,439,280
2.1 4,439,281
38 R 4,439,282
4,439,283
43 T 4,439,284
51 4,439,285
54 R 4,439,286
58 4,439,287
114 4,439,288
146 4,439,289
149 4,439,290
159.23 4,439,291
165 4,439,292
180 P 4,439,293
192 E 4,439,294
229 4,439,295
253 4,439,296
257 4,439,297
258 4,439,298
271 4,439,299
272 4,439,300
278 4,439,301
290 R 4,439,302
434 4,439,303

CLASS 206

148 4,438,843
287.1 4,438,844
330 4,438,847
366 4,438,845
387 4,438,846
588 4,438,848
592 4,438,849
634 4,438,850

CLASS 208

8 LE 4,439,304
10 4,439,305
11 R 4,439,306
4,439,307
33 4,439,308
51 4,439,309
111 4,439,310
179 4,439,311
216 PP 4,439,312
251 H 4,439,313

CLASS 209

166 4,439,314
616 4,438,851

CLASS 210

90 4,439,315
150 4,439,316
151 4,439,317
208 4,439,318
238 4,439,319
394 4,439,320
493.1 4,439,321
500.2 4,439,322
608 4,439,323
691 4,439,324
740 4,439,325
757 4,439,326
772 4,439,327

CLASS 211

11 4,438,852
77 4,438,853

CLASS 213

127 4,438,854
153 4,438,855

CLASS 215

12 R 4,438,856
256 4,438,857

CLASS 219

10.55 E 4,439,656
56 4,439,658
69 M 4,439,660
69 V 4,439,659
99 4,439,661
121 LK 4,439,663
121 PR 4,439,657
121 PY 4,439,662
124.02 4,439,664
4,439,665
130.21 Re.31,544
213 4,439,666
230 4,439,667
289 4,439,669
438 4,439,668

CLASS 220

3 4,438,858
3.2 4,438,859
4 B 4,438,860
86 AT 4,438,862
86 R 4,438,861
227 4,438,863
265 4,438,864
270 4,438,865
319 4,438,866

CLASS 221

197 4,438,867
240 4,438,868

CLASS 222

1 4,438,869
48 4,438,870
137 4,438,871
217 4,438,872
616 4,438,873

CLASS 223

88 4,438,874

CLASS 224

42.03 R 4,438,875
154 4,438,876
275 4,438,877
319 4,438,878

CLASS 226

188 4,438,879

CLASS 228

1 A 4,438,880

CLASS 235

382 4,439,670
449 4,439,671
463 4,439,672

CLASS 237

2 B 4,438,881

CLASS 239

462 4,438,882
553.3 4,438,883
600 4,438,884

CLASS 241

101 B 4,438,885

CLASS 242

25 A 4,438,886
43.2 4,438,887
56.9 4,438,888
67.1 R 4,438,889
130 4,438,890
190 4,438,891
199 4,438,892

CLASS 244

3.21 4,438,893

CLASS 248

73 4,438,894
396 4,438,895
523 4,438,896
544 4,438,897
561 4,438,898
642 4,438,899

CLASS 250

214 A 4,439,673
227 4,439,674
253 4,439,675
256 4,439,676
260 4,439,677
4,439,678
282 4,439,679
310 4,439,680
4,439,681
327.2 4,439,682
381 4,439,683
396 R 4,439,684
398 4,439,685
492.3 4,439,686

CLASS 251

1 B 4,438,900

CLASS 252

8.05 4,439,329
8.5 LC 4,439,328
8.55 D 4,439,332
4,439,334
8.55 R 4,439,333
8.75 4,439,335
8.8 4,439,330
4,439,331
32.7 E 4,439,336
70 4,439,337
79.1 4,439,338
80 4,439,339
299.63 4,439,340
305 4,439,341
4,439,342
4,439,343
312 4,439,344
330 4,439,345
408.1 4,439,346
4,439,347
426 4,439,348
500 4,439,351
518 4,439,352
522 R 4,439,353
4,439,354
541 4,439,355

CLASS 254

29 A 4,438,901
106 4,438,902
269 4,438,903
311 4,438,904
389 4,438,905

CLASS 260

112 B 4,439,357
4,439,358
112 R 4,439,356
112.5 R 4,439,359
4,439,360
141 4,439,361
152 4,439,362
239.1 4,439,363
239.3 R 4,439,364
395 4,439,365
397.1 4,439,366
404 4,439,368
453 P 4,439,369
4,439,370
465 C 4,439,371
465 E 4,439,372
502.5 F 4,439,373
512 R 4,439,374

CLASS 261

29 4,439,375
50 A 4,439,376
52 4,439,377
111 4,439,378

CLASS 264

12 4,439,379
16 4,439,380
26 4,439,381
29.5 4,439,382
32 4,439,383
37 4,439,384
4,439,385
102 4,439,386
108 4,439,387
130 4,439,388
216 4,439,389
297.2 4,439,390
317 4,439,391
511 4,439,392
532 4,439,393
535 4,439,394

CLASS 266

44 4,438,906
217 4,438,907

CLASS 267

8 R 4,438,908
64.26 4,438,909
126 4,438,910

CLASS 269

32 4,438,911
55 4,438,912
60 4,438,913

CLASS 270

31 4,438,914

CLASS 271

9 4,438,915
93 4,438,916
227 4,438,917
251 4,438,918

CLASS 272

1 B 4,438,919
67 4,438,920
73 4,438,921

CLASS 273

1 GA 4,438,922
1.5 R 4,438,923
58 B 4,438,924
75 4,438,925
85 G 4,438,926
90 4,438,927
121 R 4,438,928
127 R 4,438,929
4,438,930
167 H 4,438,931
237 4,438,932

CLASS 277

9.5 4,438,933
92 4,438,934
205 4,438,935
212 C 4,438,936
215 4,438,937
230 4,438,938
236 4,438,939

CLASS 280

12 S 4,438,940
47.4 4,438,941
278 4,438,942
432 4,438,943
460 R 4,438,944
501 4,438,945
602 4,438,946
615 4,438,947
618 4,438,948
804 4,438,949

CLASS 283

70 4,438,950

CLASS 285

39 4,438,952
93 4,438,953
104 4,438,954
189 4,438,955
223 4,438,956
4,438,957
234 4,438,958
340 4,438,959
367 4,438,960

CLASS 290

40 R 4,439,687

CLASS 292

67 4,438,961
144 4,438,962
168 4,438,963
216 4,438,964
256.75 4,438,965
259 R 4,438,966

CLASS 294

164 4,438,967

CLASS 296

1 R 4,438,968
146 4,438,969
190 4,438,970
191 4,438,971
223 4,438,972

CLASS 297

304 4,438,978
349 4,438,973
379 4,438,974
412 4,438,975

CLASS 299

4 4,438,976
64 4,438,977

CLASS 301

37 PB 4,438,979

CLASS 303

6 C 4,438,980

CLASS 305

14 4,438,981
35 EB 4,438,982

CLASS 307

115 4,439,688
265 4,439,689
272 R 4,439,690
279 4,439,691
297 4,439,692
353 4,439,693
362 4,439,694
477 4,439,695
494 4,439,696
530 4,439,697

CLASS 308

2 A 4,438,983
3.9 4,438,984
6 C 4,438,985
6 R 4,438,986
10 4,438,987
174 4,438,988
184 R 4,438,989
187.1 4,438,990
189 R 4,438,991
201 4,438,992

CLASS 310

12 4,439,698
13 4,439,699
4,439,700
45 4,439,701
80 4,439,702
186 4,439,703
211 4,439,704
338 4,439,705
353 4,439,706

CLASS 312

140 4,438,993
330 R 4,438,994

CLASS 313

130 4,439,707
140 4,439,708
406 4,439,709
414 4,439,710
487 4,439,711
533 4,439,712

CLASS 315

370 4,439,713
371 4,439,714

CLASS 318

627 4,439,715
632 4,439,716
696 4,439,717
729 4,439,718

CLASS 320

31 4,439,719

CLASS 322

4 4,439,720
31 4,439,721

CLASS 323

248 4,439,722

CLASS 324

52 4,439,723
55 4,439,724
61 R 4,439,725
156 4,439,726
158 R 4,439,727
164 4,439,728
165 4,439,729
232 4,439,730
239 4,439,731
247 4,439,732
322 4,439,733
327 4,439,734
404 4,439,735
437 4,439,736

CLASS 329

50 4,439,737

CLASS 330

10 4,439,738
107 4,439,739
124 R 4,439,740
149 Re.31,545
4,439,741
262 4,439,742
267 4,439,743
285 4,439,744
296 4,439,745

CLASS 331

82 4,439,746

CLASS 333

208 4,439,747
239 4,439,748

CLASS 334

7 4,439,749

CLASS 335

198 B1,4,184,134
274 4,439,750
278 4,439,751

CLASS 338

2 4,439,752
320 4,439,754
325 4,439,753

CLASS 339

19 LC B1,4,210,376
39 4,438,995
40 4,438,996
97 R 4,438,997
154 A 4,438,998
176 MF 4,438,999
176 MP 4,439,000
4,439,001

CLASS 360

347 AD 4,439,756
365 VL 4,439,757
546 4,439,758
703 4,439,759
735 4,439,761
750 4,439,762
799 4,439,760
825.5 4,439,763
870.02 4,439,764
980 4,439,755

CLASS 343

6 A 4,439,765
9 R 4,439,766
18 B 4,439,768
18 E 4,439,767
380 4,439,769
381 4,439,770
704 4,439,771
749 4,439,772
778 4,439,773
912 4,439,774

CLASS 346

75 4,439,775
4,439,776
76 PH 4,439,777
136 4,439,778
140 PD 4,439,779
140 R 4,439,780
153.1 4,439,781

CLASS 350

4.1 4,439,002
6.6 4,439,003
96.12 4,439,004
96.15 4,439,005
96.20 4,439,006
96.30 4,439,007
96.31 4,439,008
99 4,439,009
174 4,439,010
255 4,439,011
294 4,439,012
307 4,439,013
350 R 4,439,015
356 4,439,016
388 4,439,014
427 4,439,017
430 4,439,018
4,439,019
443 4,439,020
452 4,439,021
572 4,439,022

CLASS 351

206 4,439,023
207 4,439,024
212 4,439,025
219 4,439,026

CLASS 353

77 4,439,027
119 4,439,028

CLASS 354

62 4,439,030
274 4,439,031
293 4,439,032
316 4,439,033
479 4,439,029

CLASS 385

3 DD 4,439,034
15 4,439,035
75 4,439,036

CLASS 356

402 4,439,037
408 4,439,038
416 4,439,039

CLASS 357

17 4,439,782

CLASS 358

22 4,439,783
86 4,439,784
120 4,439,785
148 4,439,786
195.1 4,439,787
213 4,439,788
256 4,439,789
4,439,790
342 4,439,791

CLASS 360

4 4,439,798
77 4,439,799
78 4,439,800
97 4,438,542
106 4,439,792
121 4,439,793
127 4,439,794
131 4,439,795
4,439,796
134 4,439,797

CLASS 361

55 4,439,801
56 4,439,802
63 4,439,803
92 4,439,804
4,439,805
98 4,439,806
127 4,439,807
144 4,439,808
220 4,439,809
272 4,439,810
313 4,439,811
314 4,439,812
321 4,439,813
4,439,814
386 4,439,815

CLASS 362

96 4,439,816
250 4,439,818
255 4,439,817

CLASS 363

17 4,439,819
21 4,439,820
26 4,439,821
56 4,439,822
161 4,439,823

CLASS 364

150 4,439,824
167 4,439,825
200 4,439,826
4,439,827
4,439,828
4,439,829
4,439,830
200 B1,4,344,132
422 4,439,831
426 4,439,832
431.09 4,439,833
474 4,439,834
786 4,439,835
900 4,439,836
4,439,837
4,439,838
4,439,839
4,439,840

CLASS 365

51 4,439,841
104 4,439,842
218 4,439,843

CLASS 366

2 4,439,040
144 4,439,041
154 4,439,042
164 4,439,043
292 4,439,044
297 4,439,045

CLASS 367

87 4,439,844
4,439,845
99 4,439,846
151 4,439,847

CLASS 368

120 4,439,046

CLASS 369

45 4,439,848
50 4,439,849
77.2 4,439,850
4,439,851
4,439,852
126 4,439,853
4,439,854
4,439,855

CLASS 370

85 4,439,856
100 4,439,857

CLASS 371

20 4,439,858
32 4,439,859

CLASS 372

25 4,439,861
70 4,439,860
107 4,439,862

CLASS 374

34 4,439,048
124 4,439,049

CLASS 375

18 4,439,863
98 4,439,864

CLASS 376

130 4,439,395
247 4,439,396

CLASS 377

8 4,439,865

CLASS 378

19 4,439,866
96 4,439,867
112 4,439,868
113 4,439,869
143 4,439,870

CLASS 384

100 4,439,050

CLASS 400

605 4,439,051

CLASS 403

49 4,439,052
101 4,439,053
322 4,439,054
330 4,439,055

CLASS 404

90 4,439,056
133 4,439,057

CLASS 405

24 4,439,058
4,439,062
25 4,439,059
61 4,439,060
104 4,439,061
145 4,439,063
150 4,439,064
151 4,439,065
153 4,439,066
154 4,439,067
169 4,439,068
195 4,439,069
216 4,439,070
4,439,071

CLASS 406

91 4,439,072
99 4,439,200
125 4,439,073

CLASS 408

178 4,439,074
239 R 4,439,075

CLASS 410

153 4,439,076

CLASS 411

178 4,439,078
345 4,439,079
411 4,439,077

CLASS 412

9 4,439,080

CLASS 413

1 4,439,081
56 4,439,082

CLASS 414

42 4,439,097
43 4,439,098
45 4,439,099
46 4,439,083
62 4,439,084
115 4,439,100
126 4,439,101
447 4,439,085
462 4,439,086
537 4,439,087
633 4,439,102
661 4,439,103
703 4,439,088
722 4,439,089
736 4,439,090
745 4,439,091
752 4,439,092
786 4,439,093
4,439,094

CLASS 415

52 4,439,095
131 4,439,096
161 4,439,104

CLASS 416

13 4,439,105
61 4,439,106
95 4,439,107
131 4,439,108

CLASS 417

129 4,439,110
379 4,439,111
383 4,439,112
394 4,439,113
403 4,439,114
460 4,439,115
499 4,439,116

CLASS 418

22 4,439,117
55 4,439,118
61 B 4,439,119
77 4,439,120
88 4,439,109
98 4,439,121

CLASS 420

519 4,439,397
564 4,439,398
580 4,439,399

CLASS 422

111 4,439,400
150 4,439,401
159 4,439,402
4,439,403

CLASS 423

3 4,439,404
10 4,439,405
244 4,439,406
317 4,435,407
321 S 4,439,408
328 4,439,409
350 4,439,410
560 4,439,411
573 G 4,439,412

CLASS 424

1.1 4,439,413
4,439,414
16 4,439,415
47 4,439,416
70 4,439,417
4,439,418
78 4,439,419
4,439,420
85 4,439,421
92 4,439,422
94 4,439,423
153 4,439,424
177 4,439,425
181 4,439,426
199 4,439,427
200 4,439,428
216 4,439,430
4,439,431
240 4,439,432
246 4,439,433
4,439,434
251 4,439,435
258 4,439,436
263 4,439,437
270 4,439,439
273 P 4,439,440
273 R 4,439,441
285 4,439,429
4,439,442
4,439,443
4,439,444
304 4,439,445
4,439,446
309 4,439,447
4,439,448
317 4,439,449
4,439,450
4,439,451
319 4,439,452
324 4,439,453
329 4,439,454

CLASS 425

4 R 4,439,122
112 4,439,123
4,439,124
135 4,439,126
140 4,439,125
155 4,439,127
290 4,439,128
352 4,439,129
388 4,439,130
436 R 4,439,131
548 4,439,132
556 4,439,133

CLASS 426

12 4,439,455
276 4,439,456
310 4,439,457
330.5 4,439,458
438 4,439,459
548 4,439,460
601 4,439,461

CLASS 427

14.1 4,439,462
39 4,439,463
76 4,439,464
115 4,439,465
123 4,439,466
163 4,439,467
216 4,439,468
230 4,439,469
252 4,439,470

CLASS 428

35 4,439,471
71 4,439,472
90 4,439,473
4,439,474
92 4,439,475
96 4,439,476
102 4,439,477
137 4,439,478
148 4,439,479
161 4,439,480
235 4,439,481
252 4,439,482
287 4,439,483
318.4 4,439,484
323 4,439,485
332 4,439,486
397 4,439,487
402.24 4,439,488
404 4,439,489
407 4,439,490
408 4,439,491
409 4,439,492
412 4,439,494
414 4,439,493
463 4,439,495
513 4,439,496
539.5 4,439,497
558 4,439,498
670 4,439,499

CLASS 429

27 4,439,500
70 4,439,501
104 4,439,502
108 4,439,503

CLASS 430

42 4,439,504
58 4,439,505
4,439,506
84 4,439,508
058 4,439,507
132 4,439,509
137 4,439,510
165 4,439,511
180 4,439,512
203 4,439,513
272 4,439,514
285 4,439,515
323 4,439,516
328 4,439,517
402 4,439,518
405 4,439,519
434 4,439,520

CLASS 431

1 4,439,134
2 4,439,135
7 4,439,136
8 4,439,137
12 4,439,138
20 4,439,139
31 4,439,140

CLASS 432

14 4,439,141
18 4,439,142
36 4,439,143
59 4,439,144
164 4,439,145
253 4,439,146

CLASS 433

3 4,439,147
5 4,439,148
6 4,439,149
56 4,439,150
60 4,439,151
173 4,439,152
200 4,439,153
229 4,439,154

CLASS 434

12 4,439,155
4,439,156
40 4,439,157
71 4,439,158
85 4,439,159
170 4,439,160
201 4,439,161
268 4,439,162

CLASS 435

1 4,439,521
188 4,439,522
243 4,439,523
247 4,439,525
280 4,439,524

CLASS 436

135 4,439,527
180 4,439,526

CLASS 440

86 4,439,163
91 4,439,164

CLASS 441

74 4,439,165
79 4,439,166

CLASS 464

20 4,439,167
69 4,439,168
170 4,439,169

CLASS 474

28 4,439,170
80 4,439,171
160 4,439,172
191 4,439,173

CLASS 493

125 4,439,174
413 4,439,175
419 4,439,176

CLASS 494

20 4,439,177
85 4,439,178

CLASS 501

32 4,439,528
45 4,439,529
4,439,530
75 4,439,531
117 4,439,532

CLASS 502

6 4,439,533
8 4,439,534
62 4,439,535
64 4,439,536
105 4,439,537
4,439,538
112 4,439,539
125 4,439,540
4,439,541
180 4,439,349
207 4,439,542
228 4,439,543
234 4,439,544
527 4,439,350

CLASS 521

32 4,439,545
48 4,439,546
56 4,439,547
130 4,439,548
131 4,439,549
4,439,550
4,439,551
159 4,439,552
4,439,553

CLASS 523

115 4,439,554
122 4,439,555
206 4,439,556
216 4,439,557
217 4,439,558
435 Re.31,543
437 4,439,560
513 4,439,559

CLASS 524

13 4,439,561
90 4,439,562
96 4,439,563
101 4,439,564
103 4,439,565
108 4,439,566
4,439,567
111 4,439,568
128 4,439,569
154 4,439,570
183 4,439,571
405 4,439,572
425 4,439,576
4,439,577
451 4,439,573
458 4,439,574
489 4,439,575
538 4,439,578
602 4,439,579
801 4,439,580
839 4,439,581

CLASS 525

67 4,439,582
127 4,439,583
4,439,584
4,439,585
169 4,439,586
292 4,439,587
366 4,439,588

CLASS 526

209 4,439,589
285 4,439,590

CLASS 528

14 4,439,592
45 4,439,593
67 B1 3,976,622
73 4,439,591
80 4,439,599
89 4,439,594
191 4,439,595
4,439,596
272 4,439,597
295.3 4,439,598
392 4,439,600
481 4,439,601

CLASS 536

6.4 4,439,602
4,439,603
24 4,439,604
71 4,439,605

CLASS 544

356 4,439,606

CLASS 546

89 4,439,607
283 4,439,608
334 4,439,609

CLASS 548

469 4,439,610
533 4,439,611
546 4,439,612

CLASS 549

347 4,439,613

CLASS 560

8 4,439,614
15 4,439,615
25 4,439,616
39 4,439,617
56 4,439,618
169 4,439,619

CLASS 562

493 4,439,620
599 4,439,621

CLASS 564

406 4,439,622

CLASS 568

393 4,439,623
470 4,439,624
473 4,439,625

CLASS 585

253 B1,3,381,046
435 4,439,626
4,439,627
4,439,628
803 4,439,629

CLASS 604

34 4,439,179
54 4,439,180
56 4,439,181
85 4,439,182
4,439,183
90 4,439,184
97 4,439,185
99 4,439,186
111 4,439,187
283 4,439,188
317 4,439,189
319 4,439,190
332 4,439,191
408 4,439,192
411 4,439,193
890 4,439,194
4,439,195
4,439,196
891 4,439,197
894 4,439,198
4,439,199

CLASSIFICATION OF DESIGNS

D3—	30.1	273,149		188	273,165	D11—	157	273,182		148	273,197		121	273,213		2	273,229
	40	273,150		201	273,166			273,183		199	273,198			273,214		49	273,230
	71	273,151	D7—	79	273,167		173	273,184	D18—	7	273,199		150	273,215		62	273,231
		273,152		354	273,168	D12—	7	273,185			273,200	D22—	1	273,216		79	273,232
D4—	28	273,153	D8—	8	273,169		85	273,186			273,201		8	273,217		92	273,233
D6—	15	273,154		49	273,170		157	273,187		19	273,202		25	273,218	D26—	35	273,234
	31	273,155			273,171	D14—	5	273,188	D20—	6	273,203			273,219			273,235
	47	273,156		57	273,172		106	273,189		44	273,204			273,220		139	273,236
	48	273,157		62	273,173			273,190	D21—	59	273,205			273,221	D27—	51	273,237
	61	273,158		71	273,174		113	273,191			273,206		31	273,222	D28—	7	273,238
	85	273,159		81	273,175		114	273,192			273,207	D23—	4	273,223		13	273,239
	97	273,160		356	273,176	D15—	7	273,178			273,208		72	273,224			273,240
	100	273,161		382	273,177		133	273,193			273,209		150	273,225		40	273,241
	125	273,162	D9—	346	273,179		139	273,194		64	273,210	D24—	48	273,227	D34—	21	273,242
	181	273,163		352	273,180		141	273,195		88	273,211		54	273,226		28	273,243
	186	273,164		425	273,181		147	273,196		120	273,212	D25—	1	273,228			

CLASSIFICATION OF PLANTS

P.—	30	5,210		41	5,211		54	5,212									

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,438,794		4,439,356		4,439,223		4,439,240		4,438,928		4,439,759
	4,439,718		4,439,378	04 :	4,438,591		4,439,293		4,438,929		4,439,760
4 :	4,438,686		4,439,381		4,438,853		4,439,364		4,438,930		4,439,761
	4,438,888		4,439,392	06 :	4,438,561		4,439,595		4,439,002		4,439,852
	4,438,937		4,439,395		4,438,638		4,439,596		4,439,046		4,439,854
	4,438,976		4,439,404		4,438,830		4,439,625		4,439,070	19 :	4,438,601
	4,439,006		4,439,421		4,438,932	12 :	4,438,563		4,439,076		4,438,602
	4,439,101		4,439,431		4,438,944		4,438,669		4,439,077		4,438,620
	4,439,104		4,439,463		4,438,983		4,438,698		4,439,081		4,438,660
	4,439,173		4,439,466		4,438,999		4,438,753		4,439,085		4,438,818
	4,439,235		4,439,468		4,439,001		4,438,800		4,439,089		4,438,896
	4,439,375		4,439,601		4,439,004		4,439,058		4,439,129		4,439,056
	4,439,597		4,439,614		4,439,098		4,439,073		4,439,130		4,439,319
6 :	4,438,531		4,439,664		4,439,132		4,439,155		4,439,163		4,439,740
	4,438,538		4,439,675		4,439,149		4,439,156		4,439,179		4,439,835
	4,438,575		4,439,679		4,439,174		4,439,157		4,439,188	20 :	4,438,619
	4,438,649		4,439,693		4,439,185		4,439,162		4,439,193		4,438,696
	4,438,661		4,439,705		4,439,187		4,439,297		4,439,198		4,439,196
	4,438,683		4,439,757		4,439,199		4,439,320		4,439,219	21 :	4,438,667
	4,438,708		4,439,762		4,439,200		4,439,341		4,439,348		4,438,702
	4,438,758		4,439,767		4,439,224		4,439,405		4,439,423		4,438,714
	4,438,763		4,439,772		4,439,225		4,439,407		4,439,424		4,438,776
	4,438,769		4,439,774		4,439,266		4,439,458		4,439,427		4,438,841
	4,438,793		4,439,793		4,439,347		4,439,483		4,439,452	22 :	4,438,843
	4,438,809		4,439,830		4,439,358		4,439,654		4,439,453		4,438,904
	4,438,812		4,439,834		4,439,430		4,439,668		4,439,460		4,439,311
	4,438,815		4,439,839		4,439,441		4,439,741		4,439,461		4,439,328
	4,438,835		4,439,844		4,439,446		4,344,132		4,439,488		4,439,644
	4,438,857		4,439,848		4,439,470	13 :	4,438,788		4,439,489	24 :	4,438,588
	4,438,866		4,439,858		4,439,613		4,438,881		4,439,500		4,438,727
	4,438,880		4,439,862		4,439,634		4,439,632		4,439,533		4,438,829
	4,438,883	8 :	4,438,917		4,439,665	16 :	4,438,567		4,439,552		4,439,016
	4,438,919		4,438,959		4,439,692	17 :	4,438,545		4,439,563		4,439,213
	4,438,942		4,439,045		4,439,732		4,438,578		4,439,568		4,439,553
	4,438,945		4,439,303		4,439,747		4,438,585		4,439,631		4,439,554
	4,438,962		4,439,345		4,439,765		4,438,586		4,439,635		4,439,667
	4,438,978		4,439,788		4,439,822		4,438,607		4,439,649		4,439,770
	4,439,010		4,439,818		4,439,840		4,438,617		4,439,687		4,439,845
	4,439,055	9 :	4,438,630	08 :	4,438,766		4,438,646		4,439,688	25 :	Re.31,541
	4,439,093		4,438,967		4,438,842		4,438,689		4,439,722		4,438,573
	4,439,160		4,439,190		4,439,175		4,438,705		4,439,735		4,438,604
	4,439,165		4,439,332		4,439,672		4,438,728		4,439,782		4,438,626
	4,439,177		4,439,459	09 :	4,438,678		4,438,731		4,439,798		4,438,631
	4,439,183		4,439,576		4,438,709		4,438,780		4,439,805		4,438,632
	4,439,189		4,439,577		4,439,079		4,438,797		4,439,817		4,438,636
	4,439,195		4,439,611		4,439,106		4,438,816		4,439,819		4,438,787
	4,439,226		4,439,616		4,439,107		4,438,865	18 :	4,438,572		4,438,893
	4,439,227		4,439,648		4,439,121		4,438,875		4,438,598		4,439,003
	4,439,232		4,439,673		4,439,241		4,438,878		4,438,682		4,439,061
	4,439,280		4,439,683		4,439,561		4,438,884		4,438,839		4,439,158
	4,439,282		4,439,815		4,439,600		4,438,913		4,438,855		4,439,181
	4,439,284		4,439,826		4,439,756		4,438,921		4,439,128		4,439,259
	4,439,294	01 :	4,439,216	10 :	4,438,988		4,438,924		4,439,248		4,439,263

4,439,289
4,439,302
4,439,325
4,439,501
4,439,516
4,439,571
4,439,641
4,439,642
4,439,647
4,439,686
4,439,694
4,439,724
4,439,728
4,439,734
4,439,807
4,439,827
4,439,829
4,439,846
4,439,847
4,439,864
4,337,117
26 : Re.31,543
4,438,539
4,438,540
4,438,582
4,438,583
4,438,596
4,438,640
4,438,663
4,438,666
4,438,723
4,438,724
4,438,745
4,438,751
4,438,779
4,438,798
4,438,861
4,438,877
4,438,895
4,438,898
4,438,940
4,438,960
4,438,971
4,438,973
4,438,974
4,439,048
4,439,113
4,439,152
4,439,164
4,439,169
4,439,191
4,439,285
4,439,301
4,439,374
4,439,386
4,439,419
4,439,445
4,439,566
4,439,572
4,439,582
4,439,602
4,439,604
4,439,630
4,439,650
4,439,775
27 : 4,438,544
4,438,634
4,438,656
4,438,735
4,438,737
4,438,757
4,438,762
4,438,781
4,438,848
4,438,873
4,438,925
4,439,139
4,439,140
4,439,147
4,439,154
4,439,182
4,439,387

4,439,680
4,439,699
4,439,752
4,439,809
4,439,816
28 : 4,438,819
4,439,339
4,439,742
29 : 4,438,923
4,439,014
4,439,057
4,439,087
4,439,088
4,439,105
4,439,336
4,439,342
4,439,343
4,439,344
4,439,626
4,439,627
4,439,628
31 : 4,438,592
4,438,858
4,439,072
32 : 4,438,958
4,439,040
33 : Re.31,544
4,438,574
4,439,062
4,439,096
4,439,184
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DESIGN PATENTS

01 : 273,177
05 : 273,222
06 : 273,161
273,164
273,166
273,169
273,176
273,178
273,191
273,217
273,226

273,228
273,243
08 : 273,230
09 : 273,159
273,193
12 : 273,156
273,158
273,189
273,208
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273,183

273,195
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24 : 273,216
273,224
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273,153
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273,212

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273,214
273,215
273,223
42 : 273,175
47 : 273,151
273,152
48 : 273,194
273,203
51 : 273,242
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5,211
5,212

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